# Soap

"I wonder if I remembered to tell those guys in the production department not to use anything but

*Niagara Caustic Potash*"

*P.S. It's a good idea to always give definite instructions about Niagara Caustic Soda and Carbonate of Potash, too.*

**Niagara**

**ALKALI COMPANY**

**42nd STREET, NEW YORK, N. Y.**

***Affiliated with Electro Bleaching Gas Co.***
***Pioneer Manufacturer of Liquid Chlorine***

*Through The Centuries With Alkalies*

Called the founder of the English Alkali industry, James Muspratt built the first soda plant in England, at Liverpool in 1823. Soon afterwards he erected other plants in Lancastershire, adjacent to coal fields and salt deposits. Muspratt used the LeBlanc process. At first the soap and glass manufacturers were suspicious of this "British barilla", but later the demand became so great the crude furnace product was sent off hot as soon as it was drawn.

**The COLUMBIA Trade-Mark is more than a symbol of mere chemical purity and physical uniformity. It represents a quality standard which includes these factors. But, also, it stands definitely for accurate control . . for modern equipment . . for technical skill born of experience in production and application . . for unexcelled shipping facilities . . for prompt and understanding service . . in short, for customer satisfaction. Specify COLUMBIA.**


# COLUMBIA

SODA ASH
CAUSTIC SODA
SODIUM BICARBONATE
MODIFIED SODAS
LIQUID CHLORINE
CALCIUM CHLORIDE

## THE COLUMBIA ALKALI CORPORATION

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# Soap and Sanitary Chemicals

Volume XIV
Number 6

June
1938



SANITARY Products Section, which forms a part of every issue of SOAP, begins on page 75.


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MAGNUS FIRM TO ERECT GLASS BRICK BUILDING
Builds With Glass
MAGNUS, MABEE & REYNARD, Inc.
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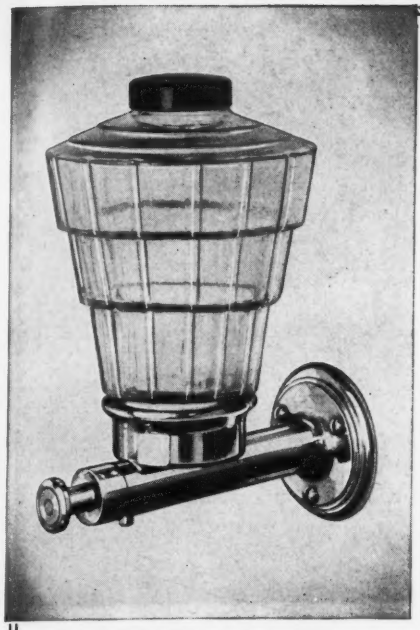
Now located in our
NEW BUILDING
16 DESBROSSES ST., N.Y.C.
UPON the solid substance of your patronage is laid the foundation for this new building ★ A symbol of growth in steel and mortar, it stands as a physical expression of your confidence in the M M & R organization ★ We dedicate it, this day, to a greater measure of quality and service to the soap, insecticide and allied industries.
QUALITY ESSENTIAL OILS,
PERFUME OILS
SINCE 1895
OFFICES IN PRINCIPAL CITIES
Oil Extracting Firm Will Erect Glass Building
Essential Oil Manufacturers Plan Ultra-Modern Plant.



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Dependable-Attractive-Inexpensive

MICHROME GRAVITY VALVE

constructed on same principle as the Triconic. No washers to leak or wear. Also gravity tanks.

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WRITE FOR DESCRIPTIVE LITERATURE ON COMPLETE LINE OF 23 MODELS

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## L-E-N-G-T-H-E-N-S LIFE

OF PUSH BUTTON DISPENSERS

## TRICONIC

(PATENT PENDING)

THE ONLY MACHINE WITH THE EXCLUSIVE FEATURE OF SELF ADJUSTING METAL TO METAL SEATS. NO WASHERS TO LEAK OR WEAR OUT. MADE FROM GENUINE ZAMAK ALLOY CHROMIUM PLATED.

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Chromium Plated

A 20 year favorite of leading jobbers . . . A sturdy, graceful, low-priced dispenser having a removable glass globe which is easily kept clean and can be quickly replaced if broken.

# CLIFTON CHEMICAL CO.

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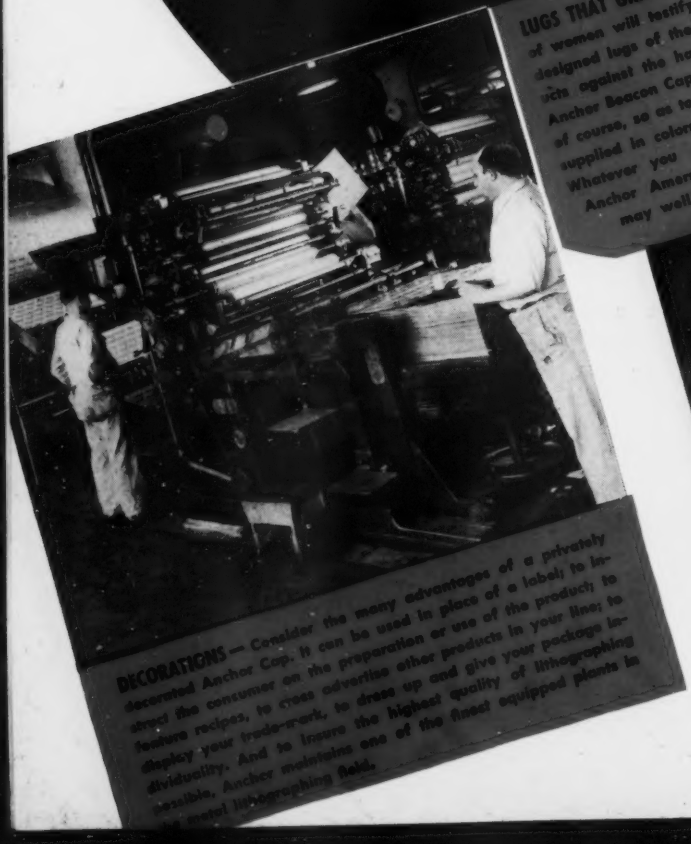
# WHY YOU SHOULD SWITCH TO ANCHOR HOCKING CLOSURES and CONTAINERS

**LUGS THAT GRIP** — Famous Amerseal Caps—made by Anchor—are known the world over. Millions of women will testify to their ease of removal! Packagers, too, know how the scientifically designed lugs of these caps guarantee airtight and moisturepreof seals, protect their products against the hazards of time, transportation and climate. Even the smooth, sleek Anchor Beacon Caps (lower right) have the same type lugs—in this case turned under, of course, so as to give a simple streamlined exterior effect. Any of them may be supplied in colors or decorated for greater distinctiveness and attractiveness. Whatever you package, Anchor Amerseal Caps for glass containers, Anchor Amerseal Can Nozzles or Anchor Amerseal Metal Boxes may well be the answer to your sealing problems.



**DECORATIONS** — Consider the many advantages of a privately decorated Anchor Cap. It can be used in place of a label; to interest the consumer on the preparation or use of the product; to feature recipes; to cross advertise other products in your line; to display your trade-mark; to dress up and give your package individuality. And to insure the highest quality of lithographing possible, Anchor maintains one of the finest equipped plants in the metal lithographing field.

**IN THE LOOKING GLASS** — An inside-outside view of an Anchor Amerseal Cap which distinctly shows Anchor's unique lug construction. Double lugs for extra gripping power, glass threads, these evenly spaced lugs draw the cap securely down over the container top with a simple quarter-turn—a mere twist of the wrist resulting in a sealing contact between the liner of the cap and the container which is tight and evenly distributed around the entire circumference. At the same time the four points of contact of the lugs promote easy removal with the least amount of effort.

**BETTER BLAKES** — (Left) Even such a familiar item as "Standard Blakes", so popular and so practical for many drug and pharmaceutical items, should be selected with an eye to quality. Anchor Hocking is proud of its Blakes, of the brilliant clean amber glass, of their accuracy of finish, of their sturdiness and all around excellence. Available in 27 different sizes, from 1/6 oz. to 32 ozs.

●

**SPOON SIZED ROUNDS** — (below) What we said of the Blakes above applies equally as well to these Wide Mouthed Rounds (below); high quality glassware and especially adapted to heavy liquids, powders and such where often a spoon or utensil is used for removal. A full range of sizes to choose from, in either amber or crystal, from 1 oz. to 160 ozs.

**WATCH ON THE LEHR** — (Above) Every Anchor Hocking Container as it leaves the lehr is carefully examined by a veteran employee skilled in detecting even the minutest defects. Under strong daylight lamps, against a white background and with all sorts of gauges and measuring devices at her side the inspector is the guardian of Anchor Hocking uniformity and dependability . . . assurance of smooth running production in your packing lines.

●

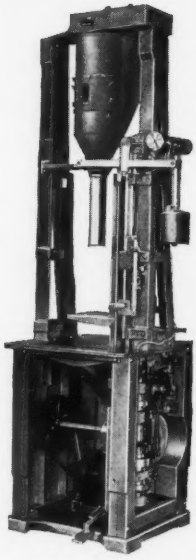
**MORE POWER TO SALES** — (Right) Sometimes sales need the little extra push that judiciously chosen premiums can give. The items shown here are practical appealing and astonishingly inexpensive... and, we've hundreds of others that might suit even better from your particular merchandising angle. Let one of our experienced premium men discuss your problems with you.

●

**ANCHOR HOCKING GLASS CORPORATION,** Lancaster, Ohio. **CLOSURE DIVISION:** Long Island City, N.Y., and Toronto, Canada.

# FILLING MACHINES

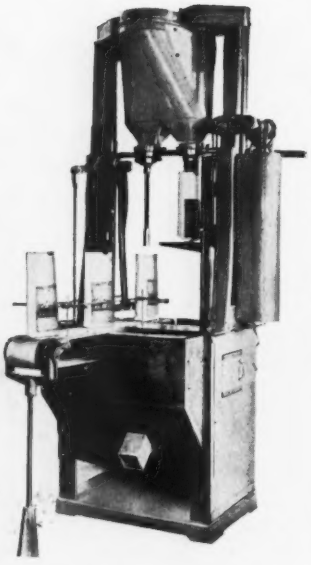
## SINGLE STATION PACKER



FOR packing various types of containers, bags, cans, cartridges, etc. This machine firmly packs the container with the proper quantity at a uniform density and a minimum amount of work for the operator. The machine can also be used for pastes—total pressure of packing may be 120 lbs. or 340 lbs.

*For Insecticides, Chemicals, Flour or Cereals up to 25 lbs. in weight in bags or other containers*

## DUPLEX PACKER AND WEIGHER



WHEN a fine accuracy of weight is required in addition to the packing or crowding of the material into the container, the Duplex Packer and Weigher is indicated. The material is packed at the first station and is gross weighed at the second station.

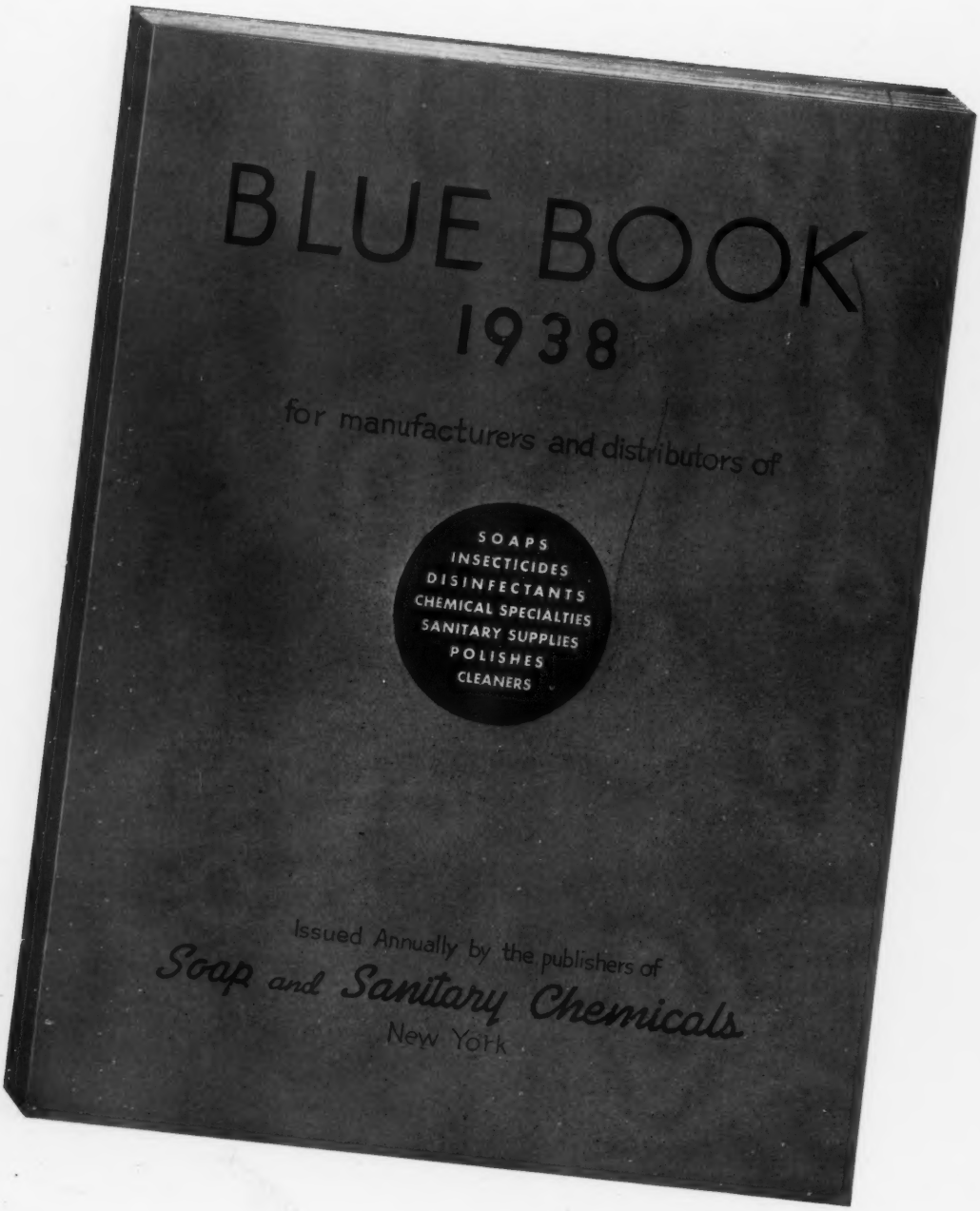
Let us consider your filling and packing problems. These are but two of the many models of packaging equipment which we manufacture. Write us what you wish to accomplish and we will specify in detail the machine best suited for your work.

STOKES & SMITH Co

PACKAGING MACHINERY — PAPER BOX MACHINERY

4915 SUMMERDALE AVE., PHILADELPHIA, U. S. A.

# *Just Out ~*




**FREE** with a three dollar annual subscription to SOAP.
A few BLUE BOOKS are still left for new subscribers.

# "BEAMAX" stands for complete satisfaction

*You can depend on "BEAMAX" to please users, as it has done for years*

# "BEAMAX"

## *Dries to a Lustre*

## LIQUID FLOOR WAX (ODORLESS)

There is no odor, during application or afterwards, when "BEAMAX" is used.

BEAMAX is recommended for finishing all types of floors, including rubber, wood, linoleum, rubber tile, asphalt tile, mastic, terazzo and cement.

No polishing is required to produce a lustrous, hard, beautiful finish. It dries in five to twenty minutes after application.

BEAMAX should be flowed on in a thin, economical coat. It smooths itself.

Floors waxed with BEAMAX are easily kept clean by sweeping or using a dry mop.

Insure the maximum protection of the surface with BEAMAX. *Your particular customers appreciate the fact that BEAMAX has no odor.*

BEAMAX—a perfect emulsion will not settle out even when stored for long periods—is furnished in convenient economical packages ranging from one gallon cans to fifty-five gallon drums.

*A Product of*

**THE DAVIES-YOUNG SOAP COMPANY**

Dayton - - - - - - Ohio

THE DAVIES-YOUNG SOAP CO.
Dayton, Ohio

Please send Sample Can and Quote Prices on "BEAMAX" (Odorless) Liquid Floor Wax.

Name .....

Address .....

City and State .....

# "Sure there are other good can companies

**... but with my competition tough as it is, I need the new package developments *first.* And I feel a whole lot surer of *getting* 'em first, doing business with American Can."**

CANCO **AMERICAN CAN COMPANY, 230 PARK AVENUE, NEW YORK, N. Y.**
*World's Largest Manufacturer of Metal and Fibre Containers*

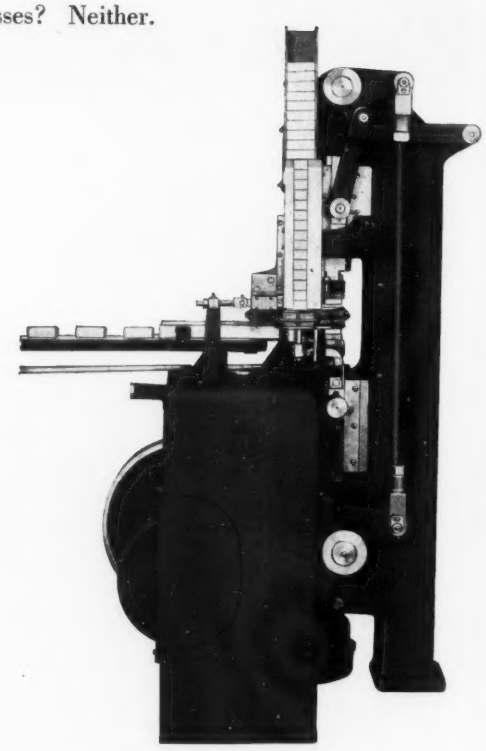
# THE BOSS HAD HEADACHES

They were aggravated by noise from worn-out soap presses operating on the floor above his office. Which did he move, his office or his presses? Neither. He installed new, noiseless, Toggle-operated

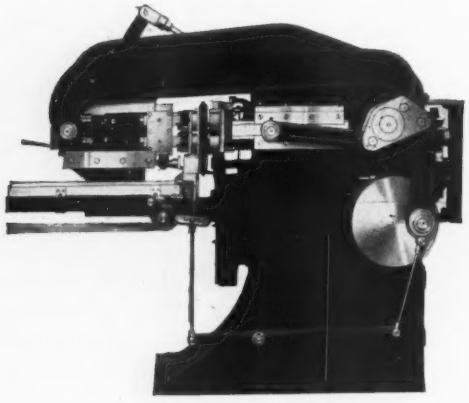
## JONES SOAP PRESSES,

relieved his headaches, and made better-looking more salable soap at much less cost.

Noise is expensive. It shatters your workers' nerves, causing accidents. Inefficient and retarded production are results of fatigue caused by noise. Worn-out presses handicap your operators and increase your costs unnecessarily.



Type ET Toilet Soap Press



Type K Laundry Soap Press

Worn-out presses batter and mar dies, which in turn produce imperfect cakes. The longer dies are used the worse their product. Sharply-cut letters and perfectly finished cakes can't come from battered dies. *Appearance* combined with quality sells soap. Why not banish unnecessary costs, imperfect pressing, noise, vibration, worker-fatigue, and headaches as well by installing Toggle-Operated Presses?

## R. A. JONES & CO., Inc.

**P. O. Box 485** **Cincinnati, Ohio**

**The Standardized *Constant Motion Cartoner* packages, bottles, jars, tins, collapsible tubes and many other articles. It feeds, folds and inserts direction sheets and corrugated board liners with the loads.**

# As the Editor sees it..

ALTHOUGH American soap production for the first quarter of 1938 showed an increase of over one-third from the figures for the last quarter of 1937, these latest tonnage figures show that in the course of the past year soap output has dropped about eleven per cent. Of course, the final quarter of 1937 was a poor one, and the sharp jump early this year was made from a distinctly low level. At the same time, comparing first quarters of 1937 and 1938 reveals that the soap industry decline is nothing like as great as that in numerous basic industries such as steel, textile, packing, automotive, and others. Even though the general level of soap production and prices is off from the high figures of 1937, it is needless to state that were all American industries operating at levels comparative to soap output, there would be no general business slump today.

THE growing threat of Japanese competition in what have in the past normally been American markets for soap and glycerin is currently giving American soap makers much concern. Japanese soap makers are reported to be landing soap in Hawaii and other tropical markets at prices said to be below American cost of production. In the face of proposals to lower our present very moderate tariff barriers, this represents a real threat to American soap exporters.

On glycerin the Japanese industry is reported to have made a direct invasion of the domestic American market. So sharply has Japanese production of glycerin been expanded in the past year or two that it is indicated Japan will be a glycerin exporter after present hostilities have died down and domestic demand has returned to normal. With this threat of added competition for American soap makers both in soap and glycerin, the present is a poor time to talk of lowering tariff barriers for an industry so essential in the national defense. It is interesting to note that in Japan there are no tariff barriers to raise or lower. There they simply prohibit all imports of soap.

EVERY so often from across the waters which separate these United States from the unrest of Europe and Asia, comes a person whose burning desire it is to visit and inspect this or that American plant. Sometimes, there are two or more persons and they want to "go through" several American plants. Now and again, these visitors come to us and suggest that possibly we would be very happy to arrange for their excursions. Frankly, we invariably refuse because we do not possess the required nerve to ask a favor of this kind,—just haven't the necessary crust to ask a manufacturer to show every Tom, Dick, and Harry how he does it.

Over a period of years, every manufacturer benefits by his experience in business, improves this and that, and works out various tricks and short-cuts. Is there any reason under the sun why he should tell all and show all to some person or persons simply because he or they come from across the sea? The same manufacturer most certainly would not invite such inspection trips from his competitors at home. And judging from reports of those visiting abroad, foreign manufacturers do not swing wide their plant gates with a great smile of welcome to Americans who come to snoop.

There have been some sad experiences resulting from plant inspections by foreigners, particu-

larly in the export markets. From what we hear, the pickpockets' meaning of the term "go through," is the meaning which should have been applied to certain past visits. Not always are these happy little excursions the innocent things which many of our smiling visitors claim for them. We have a hunch that our friends from abroad should be encouraged to concentrate their attentions on Grant's Tomb, Yellowstone Park, or Coney Island, and leave the factories for the people who run them.

WHEN President Roosevelt allowed the new revenue bill to become law late last month, without his signature, the soap industry was finally assured of elimination of the 5% tax on toilet soaps on all sales after June 30, 1938. Thus after a long wait the soap maker and the soap consumer get some measure of relief from the series of burdensome taxes that have been levied on this important household necessity in recent years. As a revenue raiser the soap tax was a failure, falling as it did into that group of taxes which produced scarcely enough to compensate for the trouble of collection. As a nuisance measure it had a high rating, making it necessary for soap companies to keep one more set of records, fill out additional reports, and either to absorb or pass along to soap users one more set of taxes. The soap industry will be glad to consign the tax and its originators to oblivion.

ONE of the most popular postures of our crusading chief executive has been as the defender of the weak against the strong. He has not stopped with the forgotten man or the farmer alone, but has adopted as one of his favorite roles that of the protector of the small business man against his larger competitor. The theory was advanced some years back that perhaps the industrial barons were opposed to the New Deal, but that little John Business Man looked up to Franklin I as his protector and champion.

This theory was pretty well exploded in that embarrassing episode at Washington when a highly vocal and obstreperous group of small business men were gathered under the spotlight and then refused to play their parts in the marionette show scheduled for them. If any further indication is needed that the small business man is the severest critic of our current regime, a trip to most any trade association convention is the final convincer. Big business is at this point pretty well beaten to its knees,—willing to deal, compromise, surrender if necessary; but the little business man is still belligerent.

His loudest and most just complaints are on taxes and spending. It is he who still raises his voice strongly in protest against the program of "bread and circuses" by which the votes of the unemployed are purchased. As long as the rank and file of the small business men of the country feel of this mind there is still some hope that a change may eventually be forced in these policies.

DISHONEST tricks and rackets against which the average manufacturer has to be constantly on guard, never seem to die out. Old ones keep bobbing up again and again, and now and then a new one makes its appearance. We have recently run across cases of foreigners seeking to represent American houses in their native countries, urging these firms to send them abroad and pay expenses. Investigation by a prominent export organization showed that these gentlemen were in the U. S. *sans* funds, and were chiefly interested in somebody paying their passages home. These export people tell us that this is an old racket, and that its revival at this time is due chiefly to the economic situation here,—and that manufacturers should be on guard against it.

THE Federal Trade Commission has in recent months been increasingly active in checking up on the claims which over-enthusiastic manufacturers of soaps and other household products make for their brands. A check over your advertising literature right at this point might be a very good precaution.


*Underwood & Underwood*

# GARAGE CLEANERS

KEEPING things clean in the average commercial garage represents heavy-duty cleaning of the first rank. Any type of mild detergent is naturally eliminated from consideration right from the first owing to the character of most of the cleaning which must be performed. Heavy grease, road oil and tar, all mixed and solidified in every crack and crevice of chassis, engine, running gear, and on the floor,—plus the drawbacks of cold water, which is the only kind available in the vast majority of garages,—this is the combination of circumstances which comprises the cleaning problem of the garage industry. To some extent, it has been solved by new detergents and new applications of old detergents, but to a great extent, it still remains a problem.

The cleaning operations in all garages are classed according to the part of the car or truck to be cleaned, not forgetting the garage floor which in itself is considerable of a job to keep clean. For all parts of trucks or cars above the chassis, that is the body, hood and fenders, there are two approved methods of cleaning today. These include the use of plain water sprayed on with pressure,—or water containing a small percentage of kerosene for cutting the grease,—and wiped dry. The other method is the use of a good quality straight potash oil soap, the only kind which experience proves will not streak the finish. In both instances, wiping down dry with chamois is essential to complete the operation. Following this cleaning, the use of wax or other type of polish is optional.

The use of any type of alkaline cleaner on body or fenders, of course, should not be considered. Although the damage which strong alkalis can do to the finish is more or less common knowledge, there are those who still wash bodies, particularly trucks in service garages, with these solutions and flush them off with a hose.

The use of soda soaps, whether the regular automobile bar soap or some other kind, is distinctly unsatisfactory for body washing. The fact that this has long since been discovered by the automobile service industry is borne out by the fact that the consumption of hard auto soap is only about 20 per cent of what it used to be some years ago. If any cleaner is used on car or truck bodies, experience has narrowed this down to a neutral potash oil soap. Although it costs considerably more than any other type of detergent used in the garage, it is the only one which has stood the test of time for this purpose.

Washing car and truck bodies and fenders, however, is not the really difficult problem of the garage service man. The chassis, running gear, and engine blocks represent the cleaning jobs of first magnitude. Mineral grease hardened by oxidation and admixture of road oil, tar and dirt which in time accumulate on almost every car and truck, are most difficult to remove. This combination of materials is usually impervious to a strong stream of cold water. Hot water or a blast of steam will soften it up, sometimes sufficiently that it may be partly scraped or wiped away. Solutions of alkali cleaners if applied in hot water by hand or with a pressure sprayer will aid in getting off this material. Solutions of sodium metasilicate, trisodium phosphate, soda ash, and the like emulsify these grease deposits once they are softened or melted. For this reason, most of the lower cost garage cleaners are made up of these products alone, as mixtures, or with soap powder. When used in hot water, however, they very frequently remove the paint on the chassis along with the grease. Where a truck is being cleaned up preparatory to a paint job, this is not a serious matter. In fact, it is a help. But where the cleaning is a regular periodic washing job, the drawbacks are obvious.

Where no hot water is available, the common practice is to scrape off heavy deposits of grease and tar on the chassis and running gear and then to dissolve off the remainder with kerosene or other light mineral oil. The kerosene wash is followed by a scrubbing with a cold water solution of metasilicate, trisodium phosphate, or a commercial soap powder, which emulsifies and removes the grease-kerosene mixture remaining. In short, it is mostly a matter of the physical state of the grease. Where it is in solution in the kerosene or in a softened form as a result of being mixed with kerosene, and the alkali solution can get at it, the alkali will do a satisfactory job of emulsification. On this one point, the hardened state of the grease deposit, hangs most of the difficulties of chassis cleaning and accounts for the comparatively recent development of new automotive cleaning products and the constant research which is going on along this line.

Before discussing some of the newer type cleaners, there are a few points in regard to the soaps and alkali cleaners which might be mentioned. The statement was made that hard auto soap consumption has dropped below 20 per cent of its former figures. This remaining 20 per cent is used today mostly for washing wheels, sometimes fenders and occasionally axles, etc. Rarely is it used any more for body washing. Mild soap powders and laundry soaps are sometimes used for the same purposes and even for chassis cleaning, but they do not have the alkalinity to do the work of heavy grease removal. For floor cleaning in the average garage, the old stand-by alkali cleaners are still most widely used, although the new solvent cleaners are tending to replace them.

In cleaning garage floors, there are two factors which make the problem different from car or truck cleaning,—there is no paint damage to be considered, and the method must be cheap, very cheap, owing to the area to be cleaned. Therefore, in the removal of heavy grease deposits from a concrete floor, as much of the grease as possible is scraped away mechanically. The balance is usually dissolved or softened up with kerosene, or any other kind of cheap mineral oil,—even drained crank-case oil is used,—and the whole is washed down the sewer or to a sump with a strong alkali solution. In fact, any material which will bring the solid grease on the floor into a liquid or semi-liquid state is suitable so that it may be emulsified and scrubbed off. Naturally, where hot water or steam are available, the floor cleaning problem is very considerably simplified.

BECAUSE of the nature of the materials to be removed in cleaning automotive running gear and garage floors,—a truly heavy-duty cleaning job wherein most detergents fail,—various special products have been developed,—some patented,—and others are being developed for the purpose. The general character of these special cleaners is, first, a high solvent action in the cold on heavy mineral grease, tar, etc. and second, an emulsifying action on the grease solution, making it possible to flush off the latter with cold water. These products are usually a combination of phenols, that is heavy coal-tar oils, with a soap. This type of product is not unlike the composition of some disinfectants on the market. They have the advantage of being miscible in all proportions with kerosene, light mineral oil, and other solvents. In this latter form, they exert a strong solvent action on heavy grease and tar in the cold. Their solvent action in removing grease does not in any way affect the painted surfaces to which the grease is adhered. In reality, they act in principle much the same as the oil applied first followed by a solution of one of the alkali salts, except that the solvent and emulsifying actions in the specialty products are more efficient and result from a single application of the product.

The history of these heavy-duty solvent soap cleaners has been varied. Various types have come on

the market from time to time, but have not met with a great deal of success. Some products, including those made by several large oil companies, have been abandoned and are no longer made. A few have been quite successful and continue to enjoy an expanding sale. Some are patented, but the majority which have made their appearance are not.

In summarizing the case for the phenol solvent type cleaner, the manufacturer of one of the more successful patented products gave in part the following facts: "These cleaners are used with kerosene, light fuel oil, etc. because heavy mineral oil and greases are best rendered fluid in the cold state by these solvents. These solvents are selective in that they dissolve only the grease and grease-adhering dirt and do not injure the painted surfaces of the car, engine, or chassis. However, these solvents are not completely volatile, and when used alone, they leave a considerable film of oil and grease behind which it is difficult to wash away with a stream of water. On the chassis or garage floor, even a strong stream of water will roll off and fail to budge this oily film.

"It would seem best therefore in removing grease from floor or chassis to use a solvent plus an alkaline soap powder or similar product. The solvent is to dissolve the grease and the alkali is to emulsify the oil and maintain a fairly high pH in order to insure emulsion stability. However, there is present in this combination free alkali which is not readily controlled. There are on the market oil soluble soaps which contain substantial quantities of soap, alkali, and phenols. The phenols are present because of their exceptional solvent action against tarry mineral oil residues and oxidized oils, as well as for their high boiling point. The phenols also appear to combine with any free alkali in the composition to prevent damage to painted surfaces, but at the same time give a powerful solvent and emulsifying action which the products do not have when they are absent.

"These special cleaners are usually sold in the form of concentrates to be diluted with kerosene or other oil for use. Inasmuch as they contain high boiling solvents such as the phenols, they retard the evaporation rate of the product, especially when used on warm parts of a car or truck such as an engine block, giving ample time to wash away the cleaner and the grease which it has dissolved or softened. The percentage of cleaner to kerosene or other solvent used may be very low, just enough to "wet out" the grease or tar film, and even at the lowest percentage, they render the kerosene readily emulsifiable with cold water so that it can be washed away instantly."

This manufacturer states that many tons of alkali cleaners and soap mixtures are being used by the garage trade today with satisfaction and general effectiveness. He maintains, however, that the trend is toward special products of the self-emulsifying solvent type, both the kind which are in use today and those which are now being developed. He maintains that because the solvent cleaners are effective detergents in one operation with cold water, their saving in labor cost more than makes up for their higher price. He compares the single operation required in their use with the two steps,—first kerosene, and second, a solution of alkali,—needed with the soap powder and alkali salts, as of much significance in garages where the labor problem and time element are important.

Of the various emulsion cleaners on the market, there are apparently no successful compositions which can be diluted with water for use,—that is, prior to application. All require kerosene, fuel oil, or some similar solvent for effective cleaning. They can be diluted with water to form emulsions, but these emulsions are not at all efficient in the removal of heavy grease deposits and they are never used in this manner.

In spite of new developments, alkali soap powders, and metasilicate, T.S.P., soda ash, etc. still represent the bulk of the detergent consumption for heavy duty garage work. They are cheap, and in a concentrated form, which does not mean a heavy freight expense. They work well into the plan of using kerosene or fuel oil first,—these are generally available locally from tank trucks,—followed by an alkali wash. They bring complaints from garage workers of being hard on the hands, but this has also been heard regarding some of the solvent-emulsion cleaners. The fact that they are cheap and effective, —especially the cheap part,—keeps them in the fore with a large part of the garage trade. At the same time, the makers of the emulsion products hold that owing to the very small quantity of these required, they are on the whole able to compete with the kerosene-alkali combination on a price basis.

Incidentally, of the various and sundry garage cleaners which have been on the market, and many of which have passed on, those which have been in liquid form do not seem to have been successful. These are usually oil solutions or ready-made emulsions on which the expense of shipping is considerably out of proportion to the value of the material. Consequently, the concentrated type of phenol-solvent cleaner and the alkalis, which permit the garage to buy its kerosene or other oil locally and do not require shipping it long distances as part of the product, have been in a distinctly more advantageous position economically. For when all is said and done, in dealing with the garage trade, price is the most essential features of any product which will do a half-way decent job. The garage operator has been educated to buy cheap products on the whole, and it is this which stands in the way of the development and introduction of new detergent products in that industry no matter how superior they might be,—and it is the factor which gives the low-cost alkalis and soap powders the strongest hold in maintaining their tonnage position in the garage cleaner market.

# BLEACHING

# *in the Soap Plant*

## Ability to bring up the color of off-grade oils, fats, and soaps a vital factor in raw material costs

**By C. R. Kemp**

*J. R. Watkins Company*

BECAUSE oils and fats constitute the largest single expense in the soap maker's bill for raw materials, they offer the greatest opportunity for saving money in the soap plant. The experienced buyer who is fully familiar with the soap-making properties and possibilities of various available oils and fats, is often in a position to save his firm considerable money in raw material costs. Whether or not a fat or oil will respond to some method of bleaching, may be one of the important points in making a decision as to its purchase or rejection. If it may be bleached readily and at low expense, its attractiveness as a purchase for the soap kettle is naturally enhanced.

Knowledge of economical bleaching remains of utmost importance in the soap plant, even though the art of bleaching dates back to biblical times. Mention is made in the Bible of the fuller: "White as snow so as no fuller on earth can white them." Mark IX 3. Many bleaching methods are known and in use today, and each method has some particularly desirable feature. A particular method employed in the case of a certain fat or oil, may or may not be desirable for use with a different fat or oil. The trend of recent years has been away from the chemical methods in favor of non-chemical bleaching. The trend away from chemical bleaches has been due to one or more reasons, such as the high cost of chemicals, the cost of necessary equipment, higher labor cost, the difficulty in removing the last traces of the chemical employed, or failure in procedure due to the critical nature of the process.

The preparation and bleaching of fats and oils for the soap kettle are so closely related that they should really be considered as general improvement rather than just a method for bleaching to a lighter color. Included in this procedure are some of the better known and most frequently employed procedures such as:

1. Chemical bleaching, such as hypochlorite, bichromate bleaches, etc.
2. High temperature, with or without blowing air.
3. Caustic treatment, removal of free fatty acids.
4. Fuller earth, carbons, etc.
5. Distillation and steam treatment.

*Hypochlorite Bleach:* This is an effective and not too costly method particularly adaptable to lower grade greases,—and the procedure is simple. A solution is prepared by mixing one part of bleaching powder with two parts of cold water and when thoroughly mixed sodium carbonate or sodium bicarbonate is added until no further precipitate is formed. The bicarbonate is preferable if time is an element because the precipitate will settle quicker than if sodium carbonate were used. The reaction takes place according to the equation: $CaOCl_2 + NaHCO_3 \rightarrow CaCO_3 + NaCl + HOCl$.

Bleaching is conducted at about 135° to 150° F., but not higher than 150° F. For every 1000 pounds of grease to be bleached, there must be added 7.5 pounds of the bleach solution and well mixed and then for every pound of bleach used an equal amount of hydrochloric acid is added, in this case 7.5 pounds. Agitation of the mixture is continued for a period of about one-half to one hour. This will usually bleach the grease as much as it is capable of being bleached, although in instances of ex-

tremely poor grease, it may be desirable or necessary to repeat the treatment. After the bleach liquor settles, it is drawn off and the grease is washed with warm water until free from acid. The entire procedure should be conducted in a wooden or lead lined tank.

*Bichromate Process*: A good example of this process is to be found in the bleaching of palm oil. The chrome process of bleaching palm oil is comparatively rapid. The nascent oxygen evolved, being more active, will bleach oils which air alone will not bleach. When hydrochloric acid is used, chlorine is liberated by the oxidation of hydrochloric acid according to the equation: $Na_2Cr_2O_7 + 14\ HCl \rightarrow 2NaCl + 2CrCl_3 + 7H_2O + 6Cl$ provided there be no other reaction of the nascent chlorine, it liberates nascent oxygen in this manner: $6Cl + 3H_2O—6HCl + 3O$. In practice it is found necessary to use an excess of acid over that theoretically indicated.

For the best results, an oil which is under 2 per cent impurities and has a fairly low percentage of free fatty acids should be chosen. Lagos palm oil is best adapted to these requirements. The oil is melted by open steam from a jet introduced through the bung, the melted oil and condensed water running to the storage tank through two sieves (about ⅛ inch mesh) to remove fibrous material and other gross impurities. The oil thus obtained contains fine earthy and fibrous material and vegetable albuminous matter which should be removed, as far as possible, since the chemicals are wasted in their oxidation and they retard the bleaching. This is best done by boiling the oil for one hour with wet steam and a 10 per cent solution of common salt (2 per cent salt on weight of oil used) in a lead-lined or iron tank. After settling overnight, the brine and impurities are removed by running them off from a cock at the bottom of the vat. The oil is run out into the bleaching tank through an oil cock, situated about seven inches from the bottom.

The bleaching tank is a lead-lined tank approximately 4 feet deep, 4 feet long and 3½ feet wide, holding about 1½ tons. The charge is one ton. A leaden outlet pipe is fixed at the bottom, to which is attached a rubber tube closed by a screw clip. A plug also is fitted into the lead outlet pipe from above. Seven inches above the lower outlet is another tap through which the oil is drawn off.

The tank is further equipped with a wet steam coil and a coil arranged to allow thorough air agitation, both coils being of lead. A good arrangement is to use one coil to deliver either air or steam. These coils should extend as nearly as possi-

ble over the entire bottom of the tank and have a number of small downward perforations, so as to distribute the agitation throughout the mass.

The temperature of the oil is reduced to 110° F, by passing in air, and 40 pounds of fine common salt per ton added through a sieve. About one-half of the acid (40 pounds of concentrated 20 deg. commercial hydrochloric acid) is now poured in, and this is followed by the sodium bichromate in concentrated solution, previously prepared in a small lead vat or earthen vessel by dissolving 17 pounds of bichromate in 45 pounds of commercial hydrochloric acid. This solution should be added very slowly, three hours being allowed for adding it. The whole mass is thoroughly agitated with air during the addition and for one hour after the last of the bleaching mixture has been introduced. The whole mixture is allowed to settle for one hour and the exhausted chrome liquors are then run off from the lower pipe to a waste tank. About 40 gallons of water are run into the bleached oil and the temperature raised by open steam to 150° to 160° F. The mass is then allowed to settle overnight.

One such wash is sufficient to remove the spent chrome liquor completely, provided ample time is allowed for settling. A number of washings given successively with short periods of settling do not remove the chrome liquors effectively. The success of the operation depends entirely upon the *completeness of settling*. The wash water is drawn off as before and the clear oil run to storage tanks or to the soap kettle through the upper oil cock. The waste liquors are boiled with wet steam and the oil skimmed from the surface, after which the liquors are run through an oil trap.

By following the above instructions carefully, it is possible to bleach one ton of palm oil with 15 pounds of bichromate of soda and 85 pounds of hydrochloric acid. The spent liquors should be of a bright green color. Should they be of a yellow or a brownish shade, insufficient acid has been used and more must be added to render the whole of the oxygen available. If low grade oils are being treated, more chromate will be necessary, the amount being best judged by conducting the operation as usual and, after the addition of the chromate, removing a sample of the oil, washing the sample, and noting its color when rapidly cooled. A little practice will enable the operator to judge the ratio between the color to be removed and the amount of bleaching mixture to be added. To obtain success with this process, the method given must be adhered to even in the smallest detail. This applies to the temperature at which each operation is carried out particularly.

*High temperature and air bleaching*: This process is exemplified by the well known air bleaching of palm oil. The method of conducting this process is identical with the chromate process to the point where the hydrochloric acid is to be added to the oil. In this method, the active bleaching agent is the oxygen of the air. The equipment is similar to that of the former process, except that an iron tank will suffice. The speed of the process depends upon the amount of air blown through the oil, its distribution and temperature.

After the impurities have been removed, as outlined under the chrome process, the temperature of the oil is raised to boiling, preferably by closed steam. The steam is then shut off and air allowed to blow through the oil until it is completely bleached, the temperature being maintained above 150° F, by passing in steam occasionally. Usually a ton of oil is readily and completely bleached after the air has been passed through it for 3 to 8 hours, provided the oil is thoroughly agitated by a sufficient flow of air. If the oil is not bleached in 8 hours, it will probably not air bleach. In this case chrome bleaching can be resorted to. If the oil has been allowed to settle overnight, it is advisable to run off the condensed water and impurities by the lower cock before agitating again the second day.

When the oil has been bleached to the desired color, which can be determined by removing a sample and cooling, the mass is allowed to settle, the water run off to a waste tank from which any oil carried along may be skimmed off, and the supernatant clear oil run to storage or soap kettle. In bleaching by this process, while the process consumes more time and is not as efficient in bleaching the lower grade oils, the cost is less. With a good oil, success is more probable, as there is no possibility of any chrome liquor remaining in the oil. When the chrome method is improperly conducted and the liquors are not completely removed, they give the bleached oil a green tint.

Instead of blowing air through it, the heated oil may be brought into repeated contact with the air either by a paddle wheel arrangement or by pumping it into an elevated vessel, pierced with numerous fine holes from which the oil continuously flows back into the tank from which it is pumped. While in these methods, air, light and heat act simultaneously in the bleaching of the oil, the equipment required is usually too cumbersome to be practical.

Investigations in bleaching palm oil by oxygen have shown that not only the coloring matter, but the oil itself is affected. In bleaching palm oil for 30 hours with air, the free fatty acid content rose and the titer decreased considerably.

*Caustic Treatment*: In reality this procedure is more of a refining operation than bleaching, but since it usually precedes a bleaching operation and also because it lightens the color of the fat, reference here is quite relevant. In a general way, it is simply the addition of caustic solution in sufficient quantity to neutralize the free fatty acids present in the oil plus a small percentage excess necessary to "break." In actual procedure, the percentage of free fatty acids is accurately determined, and from this figure, the amount of caustic soda solution is determined. The temperature during and after the operation is important,

(*Turn to Page* 75)

Nissan's Aikawa, No. 1 man of the Japanese soap, and oil fat industries, who is reported floating an industrial loan in the U. S.

# Japan's Soap...

## The industry in Nippon continues to expand rapidly in face of war and raw material difficulties... hydrogenation and new detergents to the fore

**By Herbert Leopold**
*Tokyo, Japan*

DESPITE unfavorable wartime factors, and in the face of numerous raw material difficulties, Japan's soap industry continues to grow like a mushroom. Since 1930, it has more than doubled its output. Technical advances in the conversion of fish oils, soy bean oil, rice bran oil, and the like to suitable soap fats through refining and hydrogenation, have been of great help to the soap industry. Every effort is being made in the direction of greater self-sufficiency in raw materials. And while the industry expands its output and improves its technical position in soaps, it is not forgetting the newer synthetic detergents which are now also coming to the fore in Japan.

Japan's exports of soaps last year were valued at 5,531,000 yen, establishing a new high over the preceding year's 4,246,000 yen. As it is generally calculated that the outgoing shipments annually account for some 8 per cent of the total home production, last year's output must have totalled some 69,000,000 yen as against 53,000,000 yen for 1936. The output formerly gained at the rate of 10 per cent a year, but since 1933 the rate has been about 20 per cent. The domestic output for the past several years is recapitulated below:

| | *Quantity* 1,000 *m. tons* | *Value in* 1,000,000 *Yen* |
|---|---|---|
| 1930 | 89 | 35 |
| 1931 | 92 | 30 |
| 1932 | 104 | 32 |
| 1933 | 114 | 38 |
| 1934 | 134 | 43 |
| 1935 | 155* | 50* |
| 1936 | 175* | 53* |
| 1937 | 200* | 65* |

* = estimated.

Of the total output, Tokyo produces the largest share, about 45 per cent, and Osaka the second largest of 25 per cent. Other producing districts are Kobe, Kyoto, Nagoya and Saga, and some establishments are operating rather prosperously in Korea, Formosa and Kwantung Leased Territory.

Classified by kinds, laundry soaps not only comprise the largest share of output, but this share has also a tendency to increase at the expense of other soap products. According to the latest figures, toilet, laundry and other soaps account for 17, 74, and 9 per cent of the total output volume respectively. Several years ago the corresponding figures were 35, 50 and 15 per cent in the same order. Calculated in terms of value, however, toilet soaps comprise the largest portion with 46 per cent of the total production. The output of sulfonated products and textile soaps is far smaller although figures have been increasing in recent years as the chemical and textile industries developed. Toilet soaps are produced to cater to mass consumption, and such special-

Workers in a small soap plant packaging toilet soap. This firm manufactures under contract for the Matsuya Department Store, Tokyo.

ties as transparent, floating, shaving, and soft soaps are not produced on any scale and are still imported to some extent. Of the laundry soap production, solid grades accounted for 82 per cent and powdered soaps for the balance.

Exports of soaps are, for the most part, directed to Manchukuo, the Kwantung Leased Territory, and other Far Eastern markets.

JAPANESE SOAP EXPORTS BY DESTINATIONS

| | 1937 *Yen* | 1936 *Yen* |
|---|---|---|
| Manchukuo | 2,140,692 | 1,299,511 |
| Kwantung | 1,154,058 | 1,137,570 |
| China | 432,227 | 535,097 |
| Hongkong | 203,271 | 125,780 |
| British India | 314,108 | 237,346 |
| Dutch East Indies | 109,893 | 96,802 |
| Siam | 103,728 | 76,900 |
| Straits Settlement | 317,191 | 184,463 |
| Others | 755,414 | 552,907 |
| Total | 5,530,622 | 4,246,376 |

Of the total outgoing shipments last year, toilet soaps accounted for 3,043,000 yen, as against 2,709,000 for 1936, laundry soaps for 2,348,000, and other grades for 139,000 yen.

THE soap industry was started in Japan in the 70's, but no great progress was made until after the Russo-Japanese War of 1904-05. During the World War, the industry enjoyed great prosperity owing to the disruption of supply from England and other soap producing countries. Before the Great War, soap was produced on a household scale. Recently, however, a considerable amount of capital has been invested in this industrial branch, modern plant equipment has been installed, and well-trained personnel engaged, factors which account for the recent development outlined above.

Large manufacturers, such as those producing Kao, Lion, Velvet and other popular brands are not only operating factories for the manufacture of hardened oil and other soap making materials, but have also established firm control over the supply of copra, tallow and other raw materials. These companies have also adopted a policy of reducing production cost to the largest possible extent by establishing markets for glycerine and other salable by-products. Smaller producers are unable to compete with their bigger rivals and many have been forced to produce for them under contract or else enter into direct marketing arrangements with large distributing organizations, for instance, department stores and chains. Those unable to establish such connections have either closed their plants or gone into the production of industrial soaps or other specialties. The number of small manufacturers going out of business is quite considerable. To save what they can, the remaining small soap producers are planning to establish a large hardened oil factory under joint management to attain self-supply in raw materials.

The development of hardened oil is another factor contributing much to the progress of the soap industry in Japan. Of late the domestic output of hardened oil has risen to such proportions that there is no lack of material for laundry soap, although imports of beef tallow for toilet soaps still amount to some 2 million yen annually. This is only about half the amount imported a few years ago, and with further progress in the hardened oil industry, imports are bound to decrease still further. Imports of copra show no sign of decline, and the figure is likely to rise in the future. Incidentally, imports of soaps are considerably smaller than soap exports, totaling slightly more than 100,000 yen a year.

Beef tallow is supplied from Australia, United States, Manchukuo and some other countries. Since the trade dispute with Australia in 1935, imports from that country have been declining while those from the United States have been moving up. Copra comes from the Philippines, the Dutch East Indies, and other South Seas districts. Aromatics for perfuming toilet soaps are chiefly domestic products, but special kinds are still imported. For cheap laundry soaps, hardened fish oil and cheap vegetable oils are used. For industrial soaps and for silk-washing soap, silk worm pupa oil is in common use. Besides, caustic soda and soda ash are of course consumed in large quantities.

According to the "Kagaku Kogyo Jiho" (Chemical Industrial News), Tokyo, the consumption of fats and oils in Japan for soap making amounts to more than 90,000 metric tons, of which 55 per cent is hardened fish oil, 10 per cent beef tallow, 15 per cent coconut oil, 8 per cent rosin, 2 per cent palm oil, and the balance other kinds of oil. Of the total, some 35 per cent is supplied from abroad. Among these materials,

the bulk of beef tallow, and the entire amount of rosin and palm oil are imported. All other fats and oils are produced at home, including bean oil, cotton seed oil, kapok oil, peanut oil, castor oil, pork tallow, pupa oil, fish oil, rice bran oil, etc.

As a result of the tight government control over imports of raw materials since the outbreak of the current hostilities, dislocation of supplies has been felt in the fat and oil market. It has become next to impossible for Japanese soap makers to import beef tallow, coconut oil and special kinds of aromatics, so that substitute materials will have to be resorted to if there is no alleviation in the near future. In this connection, Mitsuzo Nakatani, of the Japan Oil and Fat Co., makes some interesting suggestions in the "Kagaku Kogyo Jiho."

"Due to recent technical developments, it is now possible for us to produce tallow-like oil from pupa and bean oils by means of hydrogenation, but there is no good substitute for coconut oil. Restrictions on importation of aromatics are also a matter of serious concern, for foreign aromatics are indispensable in many cases for producing superior soaps for export. In the event of the current international tension remaining unsettled for some time to come, the Japanese soap industry will in all probability undergo a complete change in connection with its raw materials supply. It is likely that soaps will be made from three oils: fish oil, rice bran oil and soya bean oil all of which are abundantly available in Japanese territory."

Mr. Yamazaki of the Osaka Municipal Industrial Laboratory, calls attention to the feasibility of rice bran oil as material for soaps, saying,—"According to my calculations, it is possible to produce 100,000 metric tons of oil from the total output of rice bran in Japan and Korea, although the actual output is now only some 5,000 tons. We know no better way to use such a large amount of rice bran oil than to make soaps from it."

The largest soap and fat firms are found in the "Nissan" (Japan industry) setup. This big industrial combine, which is headed by Y. Aikawa, controls two key firms, the Nippon Yushi (Oil and Fat) and Nippon Sekken (Soap) companies. The Nippon Yushi, after absorbing several other fat and oil producers last year, increased its capitalization to 40,500,000 yen, and is now the largest unit in this field. It produces not only fats, oils and soaps, but also fatty acids, glycerine, margarine, paints, varnishes, and other chemicals. The Nippon Sekken, capitalized at 2,500,000 yen, is one of the foremost soap producers in the Osaka district. Other well-known soap makers are the Kao Soap (Tokyo), Lion Soap (Tokyo), Daiichi Kogyo Seiyaku (Kyoto), Albos Pharmaceutical (Osaka), Nitto Soap (Osaka), Kyoshinsha Soap (Osaka), and Shiseido (Tokyo).

No account of the soap situation in Japan is complete without mention of sulfonated oils and higher alcohol compounds industries. The home demand for Turkey red oil, monopole soap, and other emulsifiers and detergents has been remarkably increasing in recent years because of the recent development of textile and other industries. As higher alcohol washings, German products such as Lanet wax, Lorol, and Ocenol have opened up a market in Japan, while some grades are produced at home from sperm-whale oil and coconut oil. The Tokyo Senzai K.K. (Patent Detergent Co.) and the Koatsu Kagaku Kogyo K.K. (High-pressure Chemical Engineering Co.) are two firms producing these special chemicals. The Tokyo Senzai is planning to produce detergents from higher alcohols by a sulfating process under royalty to the German Baume interests. The firm is financed by leading soap makers such as Daiichi Kogyo Seiyaku, Nippon Yushi, Kao Soap, and Shiseido. The Koatsu Kagaku Kogyo is producing coconut oil alcohol (lauryl alcohol) by means of reduction under high pressure. Much more is expected to be heard of this branch of the Japanese detergent business in the next few years.

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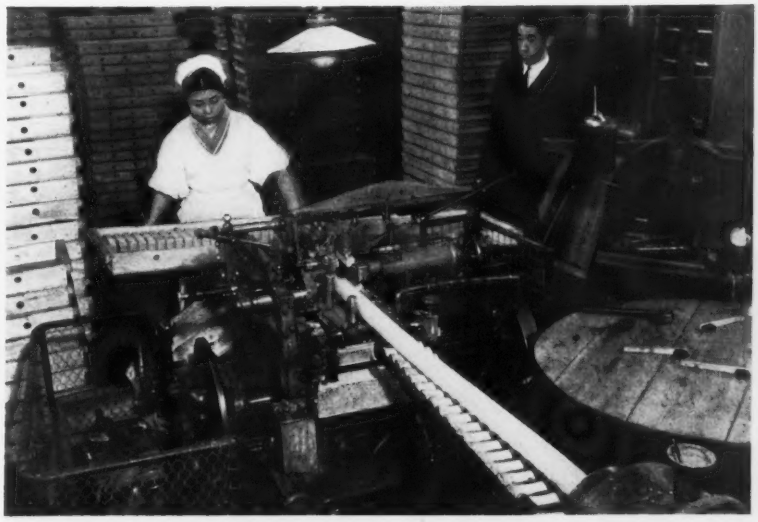
A composition for cleansing and polishing leather and artificial leather consists of an emulsion of diglycol oleate or other ethylene glycol derivative, oleic acid, ethylene dichloride, isopropyl alcohol, and ammonia in water. James C. Blair-McGuffie. British Patent No. 469,344.



Although hand labor is cheap in Japan, automatic machinery works even cheaper. In the smaller plants, as here, mechanization is slow. In the large plants, it is expanding rapidly.

# Oil of Rose

IN the distillation of geranium, the yield of oil varies greatly, depending upon climate, soil, weather, altitude, exposure to the sea, age of the plantation and other factors. Two still charges of plants even from the same field may not always give identical yields. Atmospheric conditions seem to be a main factor of variation, a cloudy sky during cutting apparently causing superior oil yield. In general, yield is higher during the dry periods, while too much humidity and rain lower the yield. A thunderstorm has very detrimental effects, and it seems to require several days of dryness before the plants again yield a normal amount of oil.

Generally speaking, the yield during the winter harvest (May to October) is about one-third lower than the yield during the more important summer harvest (January to April). On an average, 250 kilos of fresh herbs give from 600 to 700 grams of oil in summer and 400 to 500 grams in winter[1]. Not only is

[1] These figures were given to the writer by a very progressive young distiller, Mr. Richard de Palmas in Moka, Rivière des Pluies, Ste. Marie.

Top: Typical geranium still in a typical location in Reunion. Others show closer views and illustrate the crude type of distilling equipment used throughout the Island for geranium production. Owing to the character of the country, central distillation plants are not feasible.

# Geranium

**Its collection, marketing, price fluctuations, and outlook in Reunion . . . fourth article of a series.**

**By Dr. Ernest Guenther**

*Fritzsche Brothers, Inc.*

the yield of oil lower in winter but the plants, too, are smaller. In the south of the Island 250 kilos of plant material give 300 to 400 grams of oil during September and October and 500 to 800 grams from January to April.

Mr. Justin Defaud of St. Paul claims that the average yield of geranium oil varies around 0.15 per cent, 0.2 per cent being very satisfactory. These figures refer to freshly cut, green plant material. If left lying to dry in the fields, the yield of oil becomes relatively higher.

Top: Wood to fire the stills is not plentiful and is difficult to gather. A small distiller's wood pile. Below: View of a hillside geranium field. Bottom: Close-up of a geranium plantation in Reunion showing how the plants grow in the roughest type of land.

Life is still very primitive in Reunion. A water-boy with cart making the rounds of his trade.

*Yield of Oil per Acre*: One "goulette" (25 square meters) gives two still charges of plant material or about 500 kilos from one cutting. Since there are three cuttings during the two main harvests of the year, the yearly yield of oil per "goulette" is about 3.50 kilos.

*Conditions Governing Production*: The ruggedness of the volcanic hillsides with their innumerable canyons, ravines, steep slopes and lack of roads prevents transport of plant material over long distances. The entire Reunion geranium oil industry owes its peculiar character to this fundamental feature. The land is subdivided accordingly into numerous lots. Consequently, the plantings are of relatively small size and scattered.

A small landowner may do his own planting and distilling of oil. If help is required, he pays about 8 to 10 francs daily for a field laborer and 10 to 15 francs for a distiller. The bigger landowners usually work their land not with hired help but rather through tenants on a sharecrop basis. The tenants do all the planting, cultivating, harvesting and distilling and retain two-thirds of the crop, while one-third goes to the owner. This sharecropping is generally applied in Reunion not only to geranium but also other crops.

The sharecrop tenant or "colon" is usually white, sometimes of old French family and descendant of early immigrants. He reminds one of the poorer farmers in the tobacco and cotton belt of the American South. Living in the higher altitudes of Reunion, he has often retained his pure Breton blood and characteristics. The landowner assigns to him for living quarters a "paillote" or thatched bamboo hut, advancing funds in the form of cash or products (seed, food, etc.) so that the "colon" may start a crop. The still, too, belongs to the owner who also supplies the firewood for distilling. The "colon" with the help of his family tills the soil and distills the oil. In the case of geranium the system works as follows:

Every Saturday the "colons" working the different parts of the owner's property bring their small weekly output of oil to the owner's house where it is divided. The "colon" receives two-thirds and the landowner one-third. The "colon" may sell his share of oil wherever he chooses, to a field-broker or a Chinese shopkeeper (most stores being owned by Chinese), but in most cases the "colon" sells his share directly to the landowner to whom he usually is indebted. At the end of the harvest, the sharecropper may only have paid off his debts and requires new funds in the form of cash or necessary products. The "colon" thus remains sometimes continuously in debt. However, the system, like in the American cotton belt, has worked for years, and quite frequently both parties are contented, the owner if his "colon" is hard working and honest, and the "colon" if the landowner treats him in a fair way. The contracts are renewed at the end of the year and the "colons" frequently stay on the same ground for a number of years.

Considering the low living standard of the "colon" and his general apathy, this old-fashioned system works out quite well. It offers the proprietor a great advantage in that he does not have to worry about the labor problem, wages and the details of managing large property in a much subdivided country. He can confine his activities to the general supervising and controlling of his "colons". He regularly visits the stills distributed over his property to be certain of the quantity of oil his "colons" actually produce. Otherwise the latter may be tempted to understate their actual output. For the same reason, the oil is delivered every Saturday rather than at the end of the entire harvest because it is easier to check the output of one week. Of course, it is always possible for the "colon" to retain small quantities of oil and sell them clandestinely across the counter or in the back room of a Chinese trading store. Cyclones represent a graver risk for the land proprietor. If, for instance, a cyclone should destroy the fields, the "colon" might easily leave without repaying his debts and, since he is usually impoverished, the owner has little hold on him.

To summarize, Reunion geranium oil is produced in many hundreds of stills, either by small growers who do their own distilling or by a host of sharecroppers. Because of need for cash, the independent small producers as well as the larger landed proprietors sell the oil almost immediately (usually the following

Monday) to small field brokers or middlemen who continuously tour the country and purchase the oil from the producers. The price varies frequently but is always generally known throughout the geranium regions. The field brokers carry the small purchased lots to central assembling places and bulk them into larger lots. These are finally transported to big geranium oil centers, St. Pierre and St. Denis. The field broker offers the producer the advantage of always being familiar with actual market quotations. He is usually willing to pick up any small lot and tries to obtain a good price when selling the oil in town. The field broker, therefore, is more on the side of his producer friends than the town buyers.

In St. Pierre or St. Denis, the field brokers deposit their bulked lots in the stores of the town brokers or intermediary dealers who sell the various lots to the big oil exporters. The bulked lots may now consist of several hundred kilos. There are several certified brokers in St. Denis, but there are also others operating without licenses. The town brokers hold the lots in custody and sell to exporters within the limits given by the field brokers. In days of quickly changing prices, a telephone call to field brokers may be necessary to decide a sales price.

The town brokers do not export oils because they lack experience and sufficient capital. There are about six geranium oil exporters residing in St. Denis, but they usually carry no stocks and, upon receiving an inquiry or order from abroad, first consult the town brokers for quotations and, if possible, try to obtain an option. However, long options are never given out, especially during a rising market, twenty-four hours being considered sufficient.

Prices of geranium oil vary continually. They may change from morning to afternoon. The oil undergoes fluctuations like products on New York's or Chicago's Produce Exchanges. This comparison gives a picture of the difficulties encountered when buying geranium oil directly in Reunion. No town broker, landowner or oil producer is willing to work on a strict "forward delivery" basis. They are not interested in granting an option for several days at actual market prices because they may sell at the same price to other exporters. They always fear that the exporter to whom the option is given may not get the business from abroad while, in the meantime, they may miss a sale to another exporter.

The oil exporter in St. Denis is in about the same position as a Wall Street broker buying for an out of town customer. He cannot give a long option on any shares quoted on the Stock Exchange; he may buy "at best," or within limits given by his customer. In order to get an option for a period longer than twenty-four hours, the exporter in St. Denis would have to offer an inducement of several francs above the actual market price. Such procedure, however, makes business practically impossible for the exporter because his quotations to his clients abroad are then too high and very likely he would not get the business. During periods of declining prices, the town brokers naturally grant longer options but then exporters hesitate to purchase at too high a price and it is their turn to try to get the better of the town brokers.

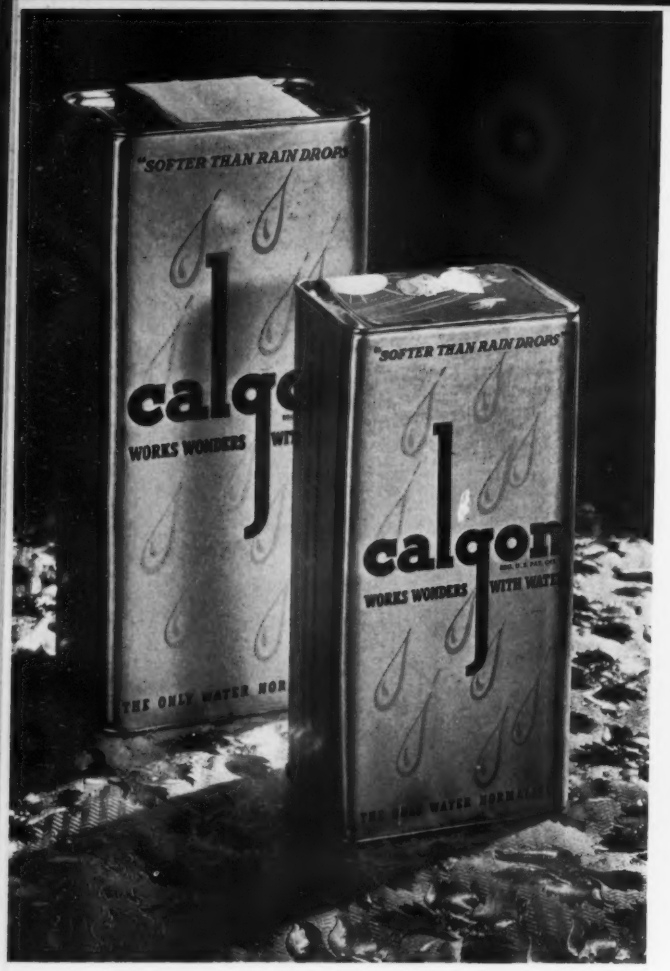
The geranium oil market in St. Denis, the export center, is so closed and relatively small that any variations in quotations among the few town brokers and exporters is almost impossible. Prices may be a few francs lower in the producing regions of the interior, according to distance and cost of transportation to St. Denis, but in St. Denis prices are uniform though ever-varying like the prices of cotton and wheat on the exchanges of Chicago, New York and London. The profits of the exporters are modest. They claim that they have to content themselves with one per cent commission when buying from town brokers.

While the bulk of oil reaches the exporters through the field and town brokers, there are a few larger landowners whose "colons" produce yearly up to several tons of oil. Whenever there exists a sufficiently attractive margin between the price offered by the field brokers and the market price laid down in St. Denis, and if sufficiently large stock warrants it, the big producers might do their own shipping to St. Denis exporters and thereby reap for themselves the profit which otherwise the field and town brokers make. Some of the bigger producers have followed this method to such an extent that they

(*Turn to Page* 69)

Looking down on the seacoast of Reunion from the mountainous regions where the geranium is grown—showing a coastal town on the left.

# New Products




This foil-coated, fibre board can for "Calgon" water normalizer was awarded an honorable mention in the recent All-America Package Competition. Use of the product is symbolized in the foil coating of the package.


Above — Geo. H. Nowland Co., Cincinnati, has just added to its line a new white shoe cleaner. The glass bottle is designed to minimize danger of tipping.

Hazel-Atlas Glass Co., Wheeling, W. Va., has just introduced a new line of premium glassware of platonite in solid colors. The new line is offered under the name "Carnivalware." It is available in red, green, yellow and blue.

# and Packages


McCormick & Co., Baltimore are marketing their "Red Arrow" garden spray in this space-conserving counter display. Bottle cap may be used for measuring.


Max Wulfsohn, Inc., New York, is marketing a new imported toilet soap under the name "Temu." Packed 36 cakes to the carton, it retails at 10c a cake.


Procter & Gamble Distributing Co. has recently re-designed the bottles and cartons for its two "Drene" packages,—"Drene" for dry hair and regular "Drene."

# News....

### New Silk Detergent

E. F. Houghton & Co., Philadelphia, have announced Silklubric Soaking Powder containing proportions of alkali salt and mildew preventive. The maker states that this makes it necessary to use only two ingredients in a silk soaking bath, the oil and the powder.

### Urge Soap for Baby Use

If mother stuck more to old-fashioned soap and water for her baby, the infant would have less trouble with skin inflammations, according to Dr. Fletcher I. Krauss of Chatham, N. J., in an address before the Medical Society of New Jersey at Atlantic City recently. "We are seeing many more cases of dermatitis in new-born infants since baby oils became popular," he said. "Soap and water and powder have gone out of vogue and dermatitis in the new-born has correspondingly increased."

### Organize Southern Chemical

Southern Chemical Corp. has been organized at 909 S. McDowell St., Charlotte, N. C. The new company will manufacture granulated cleaners and liquid soaps and other chemical specialties. Wilson McMakin is president. He is a native of Charlotte and was formerly connected with American Trust Co.

### Sponsors Cleanliness Campaign

American Oil Co., Baltimore, is sponsoring a $2,000,000 campaign from Maine to Florida based on the theme "Clean Up for More Business." A 54-page book, designed as a course in salesmanship and perfect service station appearance, has been issued to dealers outlining the cleanliness plans. Certificates are awarded for rest rooms which pass inspection tests. A feature of the campaign is the production of a show, now being given in 45 cities, to instruct dealers on how to "Clean Up for More Business."

**Continuous Soap Making**

Will all soap making eventually be revolutionized by high-speed, continuous saponification, using catalysts and special equipment? There will be a discussion of continuous soap making in July SOAP, plus a glimpse of the patent background, by Paul D. Boone, chemist and patent attorney. Watch for it!

### Colgate Heads Research Group

Robert P. Colgate, vice-president, Colgate-Palmolive-Peet Co., Jersey City, N. J., has been named chairman of the executive committee of the newly formed Industrial Research Institute, New York. The Industrial Research Institute is an organization composed of industrial research executives of middle-sized and small industrial companies, formed for purposes of discussion on problems of laboratory organization and administration, and other problems common to directors of scientific research in industry.

### American Soap Incorporated

American Soap Co. has recently been incorporated in Los Angeles, Calif., with a capital stock of $180,000. Directors are: Roy E. Webb, Jane McGurk Holt and S. A. Shoop, all of Los Angeles.

### Lever Buys Office Site

Lever Brothers Co., Cambridge, Mass., has purchased an 80,000 square foot tract of land on Memorial Drive at Wadsworth Street in Cambridge, for the construction of an administration building.

### Cherry Co. Gets FTC Complaint

Fictitious price marking of soap is alleged by the U. S. Federal Trade Commission in a complaint issued recently against A. T. Cherry Co., Dayton, Ohio. The complaint charges that the prices marked on cartons of soap distributed by the Cherry Co. do not in any way represent the actual value of the soap, but are excessive. It is alleged further that the fictitious prices are intended by the company to be higher than the prices actually charged the ultimate consumer.

### Limit Prison Soap Market

In line with a decision announced by the Michigan State Corrections department to have prison industry compete as little as possible with private industry, a soap factory at the Michigan State reformatory will supply only about 40 per cent of the needs of other state institutions and departments, it has been learned. The remaining 60 per cent will be purchased from private industry.

### Changes Firm Name

A certificate to conduct business under the new firm name of Miller Soap Co. has been issued to Miller Soap Products, Inc., 1222-26 Factory Place, Los Angeles.

### Buys 300-Acre Estate

L. J. Gumpert, sales director, B. T. Babbitt, Inc., New York, has purchased a 300-acre estate known as "The Firs" on Washington Lake in Maine.

### Royal Crown Soap Appoints

Royal Crown Soaps, Ltd., Winnipeg, Man., Canada, has placed its advertising account with R. C. Smith & Son, of Toronto.

## Soap Production Up Sharply

American soap production showed a sharp gain in the first quarter of 1938 over the bad final quarter of 1937, according to figures just released by the Association of American Soap & Glycerine Producers. Figures estimated to represent approximately 90 per cent of American production showed an output in the first 1938 quarter of 676,320,109 pounds, with a gross sales value of $66,538,841. On a poundage basis this represents an increase of 37 per cent over the final 1937 quarter, while on a dollar basis the increase is somewhat smaller,—27 per cent. As compared with the first quarter of 1937, however, when peak production for recent years was reached in the soap industry, the latest figures show a decline,—11 per cent in poundage and 8 per cent in dollar value.

## First Chicago Golf Tourney

The first 1938 tournament of the Golf Auxiliary of the Chicago Drug and Chemical and Chicago Perfumery, Soap and Extract Associations at Itasca Country Club on May 10th brought out a crowd of members and guests of record proportions. The following were prize winners: Class A—first, H. W. Cochran; second, B. T. Bush; third, H. L. Derby; fourth, T. Morgan; Class B—first, M. V. Folds; second, M. B. Vance; third, B. F. Zimmer; fourth, J. A. A. Scott; Class C—first, H. J. Edmon; second, J. H. Helfrich; third, C. M. Baldwin; fourth, K. S. Spraker; Class D—first, A. J. Ratz; second, W. R. Nay; third, W. H. Behrens; fourth, G. F. Pauley. Guest prizes were won by A. Belke, A. Maren, J. R. Davis and E. H. Erickson. The special prize of a set of clubs, leather golf bag and leather duffle bag was won by A. C. Drury. The next tournament is scheduled for June 21st at Glen Oak C. C.

## Package Mach. Marks 25th Year

Package Machinery Co., Springfield, Mass., is celebrating its 25th anniversary this year. A booklet tracing the history of the company and the development of the package goods industry in general has been published in commemoration. Package Machinery Co. was founded in 1913, the result of a merger of five wrapping machine concerns. It pioneered the development of new model machines for the soap, candy, tobacco, and chewing gum industries, and was the first to develop "Cellophane" wrapping machines.

## Soap Advertising First

Soap manufacturers were important users of newspaper advertising space in 1937, according to a survey made by Media Records, Inc., New York. The survey covered 396 newspapers in 103 cities. Lever Brothers led the soap and toilet preparations list with 8,547,747 lines. Procter & Gamble were next with 7,559,546 lines, then Colgate-Palmolive-Peet with 4,449,980 lines, and Sterling Products, with 4,375,290 lines.

## Lever Earnings for 1937

Lever Brothers & Unilever, Ltd., London, England, and Lever Brothers & Unilever N. V., Dutch subsidiary company, earned a combined net profit for 1937 of £9,156,041 (about $44,900,000). This includes the results of subsidiary and allied companies only to the extent to which dividends and bonus share issues have been or are to be received therefrom. It is the first accounting since the grouping of the three concerns, Lever Bros., Unilever, Ltd., and Unilever N. V., into the two present units.

## Stewart Leaves Anchor

I. R. Stewart, formerly president of Anchor Cap Corp., L. I. City, N. Y., now a part of Anchor-Hocking Glass Corp., has recently resigned his active connection with the company. Another change in the executive personnel of the company occurred when J. O. Deegan, formerly vice-president of Anchor Cap & Closure Corp. of Canada, Ltd., Toronto, was transferred to Long Island City as vice-president and general manager of Anchor Cap & Closure Corp.

## Japan Soap Output Gaining

Japan's domestic soap industry has made rapid progress in the past 25 years, according to figures published recently by the U. S. Bureau of Foreign and Domestic Commerce. Progress was particularly rapid during the World War and following the introduction of hardened oil as a soap raw material. Although consumption has kept pace with production, Japan now produces considerable quantities for export. In 1922 Japan's total soap output amounted to 23,569,000 yen in value, toilet soap accounting for 14,327,000 yen or over 60 per cent of the total. By 1935 production had risen in value to 50,258,000 yen, but the toilet soap proportion had dropped to 46 per cent of the total, indicating wider use of household soaps. Factory statistics for 1935 show that during the year Japan had 274 plants engaged in the manufacture of soaps and toilet preparations and that a total of 8,786 workers, of whom 4,230 were women, was employed. Imports of soap into Japan amounted to but 9,280 yen in value in 1868, the first year for which trade figures are available, and it was not until 1898 that the total value exceeded 100,000 yen in value. Imports of laundry and toilet soaps remained relatively equal in value until recent years, when receipts of laundry soaps declined sharply, owing to the increase in domestic production. Since 1930 imports have consisted almost entirely of high grade toilet soaps.

## Haitian Soap Taxes Up

A recent decree has raised the import duties on "common washing" soaps going to Haiti from 0.21 gourde ($0.203) per kilogram to 0.24 gourde ($0.232). The excise tax on soap of domestic manufacture has also been increased from 0.10 gourde ($0.097) per kilogram to 0.13 gourde ($0.125) per kilogram.

## Form Northern Chemical

Northern Chemical Co. has recently been organized at 649 Factory St., Watertown, N. Y., for the manufacture of cleaning compounds. Thomas M. Flavin is president.

### Chicago Group Holds Dance

The Annual Spring Dinner Dance of the Chicago Drug and Chemical Association was held on May 14 in the Red Lacquer Room of the Palmer House. One of the features in addition to the floor show was an old fashioned cotillion. Dr. Frank B. Kirby, retiring president of the association, was presented with a leather traveling bag in appreciation of his successful term of office. Arrangements were handled by the Banquet and Entertainment committee headed by Elmer F. Smith.

### New P. & G. Contest Offer

Procter & Gamble Co., Cincinnati, is offering 300 refrigerators in 30 daily contests running from May 20 to July 1, in a new contest promoting "P. & G. White Naphtha" laundry soap. The contest is being backed by national advertising.

### Oil Trades Outing June 14

The Oil Trades Association of New York will hold its annual spring outing at the Pelham Country Club, Pelham Manor, N. Y., June 14. The usual baseball game between the vegetable oil and petroleum groups will be held, as well as golf and tennis matches.

### Babbitt Premium Offer

B. T. Babbitt, Inc., in a new advertising campaign in Southern California newspapers is offering a hardwood salad spoon and fork set for 10 cents with the purchase of one can of "Bab-O."

### Colgate Official Buys Estate

H. K. Sniveley, general manager of Colgate-Palmolive-Peet Co. in France, has purchased a 350-acre tract of land at Asheville, N. C. He plans to build a home there next year.

### Parento Offers New Specialty

Compagnie Parento, Inc., Croton-on-Hudson, N. Y., has just introduced a new specialty under the name "Tonkaire" recommended for removing or mellowing the sharpness of alcohol odor. It is stated that this effect is secured without changing the character of the perfume base used. The product is also recommended as a mellowing agent for powder and talc perfumes. Samples are available.

A tough golf opponent adds up his wife's score,—Dr. E. G. Thomssen of the J. R. Watkins Co. on the picturesque golf layout at Winona, Minn. —Mrs. Thomssen putting. Those who have played the Winona Country Club course call it "plenty tough." (We wonder what the greens committee might say about those high heels on that there green.) . . . Picture by Dizzy Photos, Ltd., A. L. van "Amerdingen," Pres.

### Soap Employment Index

The index of employment in the soap industry for April, 1938, compiled by the U. S. Department of Labor registered 93.8 as compared with 96.0 in March, 107.6 in April, 1937, and 100 as the three-year average for the period 1923-25. The payroll index for April, 1938, was 108.5 as compared with 111.8 in March and 116.4 in April, 1937.

### Oil Chemists Elect C. H. Cox

C. H. Cox, Barrow-Agee Laboratories, Memphis, was elected president of the American Oil Chemist's Society at the annual meeting in New Orleans, last month. He succeeds M. L. Sheely, Armour & Co., Chicago. Other officers elected were: H. C. Dormitzer, Wilson & Co., Chicago, first vice president; A. E. McGee, Skelly Oil Co., Chicago, second vice president; H. P. Trevithick, New York Produce Exchange, New York, third vice president; C. P. Long, Procter & Gamble Co., Cincinnati, fourth vice president; J. C. P. Helm, J. C. P. Helm Co., New Orleans, secretary-treasurer (re-elected).

Technical problems dealing with animal and vegetable oils and fats were discussed at the meeting. W. F. Gillespie, of Bogalusa, La., spoke on tall oil, citing how methods for removing the oil from pine pulp had advanced. In 1916, he said, the value of the fatty acid was $1,600 per ton, as compared with about $35 per ton at present. Among the reports read was the report of fatty acid in soap stock committee by W. T. Watkins, Lookout Oil and Refinery, Chattanooga.

### M. M. & R. in New Quarters

Magnus, Mabee & Reynard, Inc., New York essential oil house, moved to their new ultra-modern, six-story, "glass brick" plant at 16 Debrosses St., May 23. The new plant, fronting on both Debrosses and Watt Streets and adjacent to the Holland Tunnel, provides for approximately 60,000 square feet of space, more than twice the area of the old plant. The firm occupies the building in its entirety.

## BIMS Hold 1st Golf Outing

The first golf outing of members of B.I.M.S., new organization in the soap and toilet goods field, was held at Baltusrol Country Club, May 10, with an attendance of 80. A series of outings is planned for the summer, with the next one scheduled for Tuesday, June 21, at Winged Foot Golf Club, Mamaroneck, N. Y. Among the prize winners at the first tournament were the following: C. R. Keeley, *Toilet Requisites*; Charles E. Kelly, Hagerty Bros. & Co.; William Bonyun, Daggett & Ramsdell; Charles J. Tanner, Liggett Drug Co.; Edward J. Kessling, E. Kessling Thermometer Co.; H. D. Porter, Commercial Solvents Corp.; Herbert B. Sliger, Commercial Solvents Corp.; W. F. Zimmerman, Helfrich Labs. of N. Y., Inc.; G. T. Daggett, Daggett & Ramsdell; J. E. Valentine, Oxzyn Co.; Peter L. Forsman, C. H. Forsman & Co.; Frank W. Mahr, Blake Manufacturing Co.; Paul Miller, Intl. Cellucotton Pdts. Co.; Stanley Sapery, Victor Metal Products; William Alexander, Personal Products Corp.; Fred W. Webster, Sagamore Metal Goods Co. and B. H. Badanes, McKesson & Robbins.

## 1938 1st Quarter Fat Data

Factory production of fats and oils in United States during the first quarter of 1938 totaled 1,537,433,548 pounds according to figures just released by the U. S. Bureau of the Census. Consumption of such important soap fats as coconut oil and tallow ran well ahead of production during the period, with a resultant decrease in stocks at the quarter end. The following tables show production, consumption, stocks and imports of a number of soap making oils and fats for the first quarter of 1938:

| *KIND* | *Factory operations for the quarter ending March 31, 1938* *Production (pounds)* | *Consumption (pounds)* | *Factory and Warehouse stocks March 31, 1938* |
|---|---|---|---|
| VEGETABLE OILS (1) | | | |
| Cottonseed, crude | 595,684,051 | 642,897,707 | 163,846,863 |
| Coconut or copra, crude | 74,655,516 | 122,112,551 | 197,129,705 |
| Corn, crude | 31,972,613 | 40,320,541 | 7,123,374 |
| Soybean, crude | 81,570,327 | 59,905,734 | 60,007,073 |
| Olive, inedible | ..... | 904,977 | 1,498,401 |
| Sulphur oil or olive foots | ..... | 3,219,442 | 5,920,770 |
| Palm-kernel, crude | ..... | 25,193,288 | 14,577,180 |
| Palm, crude | ..... | 69,842,945 | 146,888,333 |
| Babassu, crude | 11,965,280 | 10,693,077 | 5,965,429 |
| Linseed | 125,587,390 | 63,874,555 | 223,108,638 |
| Tallow, inedible | 132,018,313 | 166,396,394 | 225,972,414 |
| White grease | 14,997,822 | 8,458,025 | 10,525,588 |
| Yellow grease | 18,823,278 | 10,760,203 | 15,861,554 |
| Garbage or house grease | 11,443,362 | 7,272,621 | 14,615,801 |
| Fatty acids | 32,221,841 | 28,786,593 | 8,360,908 |
| Fatty acids, distilled | 13,353,599 | 13,269,391 | 5,301,055 |
| Red oil | 7,338,629 | 4,727,810 | 10,541,468 |
| Stearic acid | 5,845,964 | 2,510,996 | 3,856,839 |
| Glycerin, crude 80% basis | 39,169,657 | 40,665,716 | 13,411,721 |
| Glycerin, dynamite | 10,618,713 | 6,157,845 | 18,718,582 |
| Glycerin, chemically pure | 22,232,421 | 4,814,315 | 35,342,664 |
| Cottonseed foots, 50% basis | 108,549,907 | 110,275,070 | 32,346,417 |
| Cottonseed foots, distilled | 17,659,681 | 13,032,625 | 4,468,149 |
| Other vege. oil foots, 50% basis | 31,086,658 | 22,338,339 | 4,326,017 |
| Other vege. oil foots, distilled | ——— | 222,733 | 154,384 |
| Acidulated soap stock | 47,397,239 | 28,936,617 | 55,058,299 |
| Miscellaneous soap stock | 142,614 | 359,838 | 978,923 |

### FATS AND OILS IMPORTED FOR CONSUMPTION QUARTER ENDING MARCH 31, 1938

| *Kind* | *Pounds* | *Kind* | *Pounds* |
|---|---|---|---|
| Tallow, inedible | 350,841 | Olive oil, other inedible | 851,974 |
| Whale oil | 3,100,425 | Coconut oil | 92,208,124 |
| Stearic acid | 146,325 | Palm oil | 75,376,103 |
| Corn oil | 5,840,565 | Soybean oil | 2,015,440 |
| Palm-kernel oil | 60,603 | Glycerin, crude | 1,852,477 |
| Olive oil, sulphured | 1,372,738 | Glycerin, refined | 666,243 |

## Soaps Reduce Cleaning Hazards

The function of soaps in reducing fire and explosion hazards in the dry cleaning industry is discussed in the annual report of the British National Physical Laboratory, just issued. "Static electric charges," says the report, "are often generated by friction in the dry-cleaning of fabrics, and sparks produced in this way have been known to lead to explosions. Special soaps have long been used in the dry-cleaning industry, partly for their cleansing properties and partly because they were believed to prevent the generation of charges. Experiments made at the laboratory in 1936 showed that the addition of such soaps causes a large increase in the electrical conductivity of the cleaning bath, but that during the process of cleaning the electrical conductivity tends to fall to the low value obtained when soap is not used.

Further experiments carried out during 1937 have shown that from the electrical point of view, the active detergent constituent of the soaps is water and also that soaps not containing water have very little effect in preventing the generation of static charges. On the other hand, the addition to the bath of water alone has very little effect. The function of the soap is to carry the water into solution in the solvent. Fabrics have the property of removing the water from solution, thereby causing a fall in conductivity.

By means of an experimental generator, charges were produced by friction on a cotton belt running between two pulleys, and when the belt was run in cleaning spirit, potentials of a few thousand volts were easily obtained. On the addition of a suitable soap containing water to the liquid, the potential immediately fell to zero, but tended to rise again as the water of the soap was absorbed by the fabric. The experiments clearly show that the use of a soluble soap containing water is a valuable safety measure, and that the soap should be added periodically so that the conductivity of the liquid never falls below a value of the order of $10^{-11}$ mho per cm.

# New C-P-P Canada Laboratory

COLGATE - PALMOLIVE-PEET Co., Ltd., Toronto, Canada, has recently put into operation an enlarged and modernized soap testing laboratory whose operation is described in detail in an article in the April, 1938, issue of *Canadian Chemistry and Process Industries*. The laboratory is located in a spot free from plant noise and vibration and is separated from the main office by glass partitions.

The oven method is used for the determination of moisture in straight soaps, but in the case of filled soaps the xylol method is employed. The latter procedure utilizes standard type of equipment but a vacuum oven has been built which speeds up accurate oven moisture determinations. This is a heavy cylindrical iron oven with air-tight door, attached to an aspirator to secure the desired vacuum. This oven is heated by a gas burner, and the heat is controlled manually to maintain the temperature within a suitable range.

The control of glycerine starts with the separation of this material from the spent lye and follows through clarification by acids and metallic salts and concentration in the evaporators. The strength of crude glycerine from the evaporators is determined by the dichromate method and tests on the refined finished product include ash, fatty acid, carbonaceous matter, heavy metals, sodium chloride and others. Since the taste of glycerine is also a matter of such prime importance to food, tobacco and drug companies this is also checked periodically. A constant temperature bath is used for specific gravity tests on glycerine.

To determine completeness of saponification in finished soaps, samples are heated with alcohol, then boiled under a reflux condenser with alkali, and titrated to find out if any of the alkali has been neutralized. A large number of these tests have to be made; and it is cumbersome to attach the small flasks to regular condensers and to provide the necessary heating units. This problem was solved by fitting up a hot plate, made of a heavy piece of iron plate over an electric plate, and placing above this a tank of cooling water through which were passed sixteen small condenser tubes. Thus sixteen flasks can be attached to this apparatus at one time.

An important part of the work of the laboratory is the checking of all raw materials coming into the plant. The laboratory also has charge of investigating complaints of customers and studies specific problems of soap users with the purpose of recommending to them the most suitable soaps for their particular needs.

The laboratory is equipped to make soap boiling tests and is provided with equipment for kneading and mixing, so that the colors, perfumes, etc., required in a given soap may be estimated on small scale production. The mixing equipment is designed to simulate closely the conditions met in plant practice in the plodders.

Another important function of the laboratory is to assist the accounting department in the determination of costs. When a new product is to be manufactured, the research department is called upon to figure out the amounts of various materials needed, thus providing the cost department with information from which it can determine the production cost of the product. Through the laboratory, the cost of manufacturing of standard lines is checked by relating the amount of raw materials used to actual production yield. While the factory knows the gross amounts of materials and product, the laboratory is called upon to analyze each, since the quality enters into the equation.

In checking the production of standard lines, the laboratory takes frequent samples of raw materials and of the product for the month, and each set of samples is composited into a single sample by mixing in proportion to the amount of each sample used or produced. Then, based upon analysis of these composite samples, the cost department can figure the cost of production and account for losses during the month's operation.

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### Soaps at Leipzig Fair

The soap section at the 1938 Leipzig Fair in Germany was reported as inactive. The number of soap exhibits were about the same as in the Spring of 1937, but business both domestic and foreign was said to be disappointing. Novelty offerings this year included soap figures ranging from animals and dolls to celebrated cartoon figures. One manufacturer offered as a children's novelty a floating type of soap molded into the form of canoes, heraldic figures and the like. The usual gift boxes containing high grade soaps and perfumes to match were also on display in wide varieties.

A new hairwash consisting chiefly of dried herbs and containing no soaps was introduced this year. Substitutes for soaps, which were offered in such a wide variety a year ago, were much less in evidence. In this class one new offering consisted of a perfumed jelly packed in collapsible tubes for cleaning the hands,—no soap, water nor towel being required. World Trade Notes on Chemicals and Allied Products, May 7, 1938.

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### Foragers To Have New Home

A special meeting of the Foragers of America will be held at the Herald Square Hotel, Wednesday noon, June 15, to discuss plans for removal of the club headquarters to the Midston House, New York. All members of the organization, which is composed of sales representatives of soap and toilet goods firms, have been urged to attend this session by W. W. Neilson, club president.


"It is only natural for men who are constantly beleaguered by salesmen to adopt a mask of sales resistance. Some of us pretend to be Tough Guys. Others pose as Funny Guys. And today a slew of us, admittedly grasping at an excuse to defer decisions, have adopted the downcast attitude of the Sad Guy.

"But all of us have one thing in common . . . we hang up our masks of sales resistance when we pick up SOAP. We pay subscription cash for it because it brings us money-making ideas suggested by editors who know the soap and sanitary chemical business.

"We read the advertisements, too, because we know that any advertiser in SOAP is addressing his message to us because he has something real to offer . . . not because he gets editorial 'puffs'. Those advertisers' salesmen stand the best chance of getting back of our protective masks when they call!"

### Iowa Soap Shows Loss

Iowa Soap Co., Burlington, Ia., reports a net loss of $112,983 for the year ended December 31, 1937, comparing with a net profit of $91,756 in the previous year. Total sales in the year 1937 aggregated $2,672,515 as compared with $2,844,000 in 1936.

### 5% Soap Tax Eliminated

The 5 per cent tax on toilet soaps which has been in effect since the revenue bill of 1932 was adopted will be eliminated on all sales after June 30, 1938, as a result of President Roosevelt's allowing the new revenue bill to become law without his signature. The new revenue bill also eliminates the excise tax as applied to tooth and mouth washes, tooth pastes and dentifrices. A Senate amendment to the present bill, which would have eliminated the tax as well on all cosmetics and toilet preparations priced at 9 cents or less, was dropped from the bill in conference between the House and Senate. Thus the House amendment which gives exemption only to soaps, dentifrices and mouth washes was restored.

### Yardley Enjoins L. Bamberger

Yardley & Co., New York toilet goods manufacturers, have obtained an injunction against L. Bamberger & Co., Newark, N. J., affiliate of R. H. Macy & Co., of New York, and brought suit against Johnson Wholesale Perfume Co., of Boston, charging both companies with failure to abide by fair trade contracts. Yardley also recently obtained a permanent injunction against Weissbard Bros., Newark drug chain, charging failure to maintain prices.

### Form Hygiene Fluid Corp.

Hygiene Fluid Corp., Richmond, Va., has been formed to manufacture cleaning fluids. Michael H. Bacile is president.

### Advertising and Selling

"Advertising and Selling through Business Publications," a new book by Mabel Hanford of


Batten, Barton, Durstine & Osborn, New York advertising agency, sells for $2.50 per copy and not for $4.00 as noted in the review in the May, 1938, issue of SOAP. Copies are available through this office.

### Announce Trimethylamine

Rohm & Haas Co., Philadelphia, announce a new process for the preparation of trimethylamine, either in the anhydrous (gaseous) state or in aqueous solutions. As a result of this development, trimethylamine, it it claimed, is now the cheapest organic base available. The new process is said to produce a product of unusually high purity, — averaging close to 98 per cent, and one which, due to high strength, forms salts that are neutral or slightly alkaline. The carbonate, phosphate, stearate, silicate, sulfate, lactate and several other simple neutralization products are stable, it is said. The makers recommend triethylamine, among other commercial uses, for the saponification of oils, fats and waxes, esters and gums. It is particularly adaptable, they claim, to the synthesis of new accelerators, anti-oxidants, antiseptics, disinfectants, detergents and pharmaceuticals.

### Kentucky Chemical Moves

Kentucky Chemical Industries, Inc., tallows and greases, formerly at Covington, Ky., is now located at P. O. Box 37, Winton Place, Cincinnati.

### Give Soap at Convention

Procter & Gamble Co., Long Beach, Calif., Los Angeles Soap Co., Los Angeles, and Kerk Guild, New York, were among the concerns whose nationally advertised products were distributed as samples at a special luncheon of the Washington State Parent-Teachers Association held at Wenatchee, Wash., last month. The luncheon was an advertising promotion stunt sponsored by the Washington Parent-Teachers magazine, and was held in conjunction with the Parent-Teachers Association's three-day convention.

### Dutch Treat Outing June 21

Due to the fact that there are several other meetings and golf tournaments in the chemical industry scheduled for the first half of June, the Dutch Treat Club has changed the date of its outing, originally for June 7, to June 21. The outing will be held at the Houvenkopf Country Club. Further particulars may be obtained from R. Aeberle, E. M. Sergeant Pulp & Chemical Co., Empire State Bldg., New York.

### Lever Reports Record Gross

Gross sales of Lever Brothers & Unilever, Ltd., London, reached a record figure of £190,000,000 ($950,000,000) in 1937, 12 per cent greater than the highest previous figure, Francis D'Arcy Cooper, president of the company, told members of the board of directors at the recent annual meeting. Describing 1937 as

"in many ways the best year of the recovery since the economic crisis," Mr. Cooper said the total tonnage of soap sold established a record at nearly 850,000 tons, with the greatest "progress" being made in the United States. Total sales of "Lux" and "Lifebuoy" toilet soaps were said to be 632,000,000 bars. A sharp decline in prices of copra, groundnuts and palm oil affected earnings of the raw materials companies operated by the concern, said Mr. Cooper, but trading results were such that a profit was earned well in excess of the previous year. He said that results for the first quarter of 1938 had been disappointing, but that there were grounds for optimism in that estimates for the entire year were not less than 1937's results.

### Agrees to FTC Stipulation

Lever Brothers Co., Cambridge, Mass., has entered into a stipulation with the U. S. Federal Trade Commission agreeing to discontinue representing that "Lifebuoy" soap will improve the skin 100 per cent, or any other definite percentage; or that "Lux" toilet soap will keep the complexion flawless; or that "Lux" flakes puts new life into fabrics, implying that the original quality of the fabric can be improved thereby; or that either "Lifebuoy" or "Lux" toilet soaps can be relied on to keep the skin clear, unless this assertion is limited to conditions due to or aggravated by dirt, cosmetic residue, epithelial debris, or foreign materials.

### Tighten Whaling Regulations

New regulations under the whaling treaty act have been issued jointly by the U. S. Treasury Department and the Department of Commerce with the effect of providing closer supervision over the operations of whaling expeditions under the American flag. The new regulations, superseding those of October 9, 1936, will have the effect of safeguarding more adequately the revenue from whale oil imports and securing more complete compliance with international whaling treaties.

### T.G.A. Holds Annual Meeting

Legislative matters affecting the toilet goods industry during the past year, and plans for the industry's participation in the 1939 New York World's Fair were among the principal subjects of discussion at the third annual meeting of the Toilet Goods Association, held at the Biltmore Hotel, New York, May 24 to 26. The annual election of officers was held, with practically all of the old officers re-elected as follows: president, Herman L. Brooks, Coty, Inc.; first vice-president, Cecil Smith, Yardley & Co.; second vice-president, P. E. Hurlburt, J. B. Williams Co.; third vice-president, H. P. Willats, Colonial Dames, Inc.; treasurer, Paul F. Vallee, Roger & Gallet; secretary, J. I. Poses, A. A. Van Tine Products Corp.; executive secretary, Charles S. Welch; and chairman of the Board of Standards, H. Gregory Thomas.

Herman L. Brooks
Re-elected T.G.A. President

Entertainment features during the convention included attendance at "What a Life," current stage success, followed by supper at Billy Rose's Casa Manana; a golf tournament at Canoe Brook Country Club, Summit, N. J.; a visit to the World's Fair site; a ladies' bridge tournament at the Biltmore Hotel; and the annual reception and banquet in the Ball Room of the Biltmore on the last evening of the convention.

**Need New Equipment?**

Are you worrying along with old and worn equipment in key spots in your plant, inefficient equipment which is doing a poor job? If you feel that a government loan might be of help in modernizing your plant, read just how and where you can arrange for these loans on a distinctly liberal basis, — "New Equipment via Government Loans" by Arnold Kruckman in the July issue of SOAP.

### Introduce "Say Hura" Soap

A new all-purpose soap has been placed on the market by Sahuau Chemical Co. of Downey, Calif., under the brand name "Say Hura." A tallow base of 92 per cent is claimed for the new soap, which sells at 25 cents for a two-pound package, and for which a stop price of 24 cents is maintained.

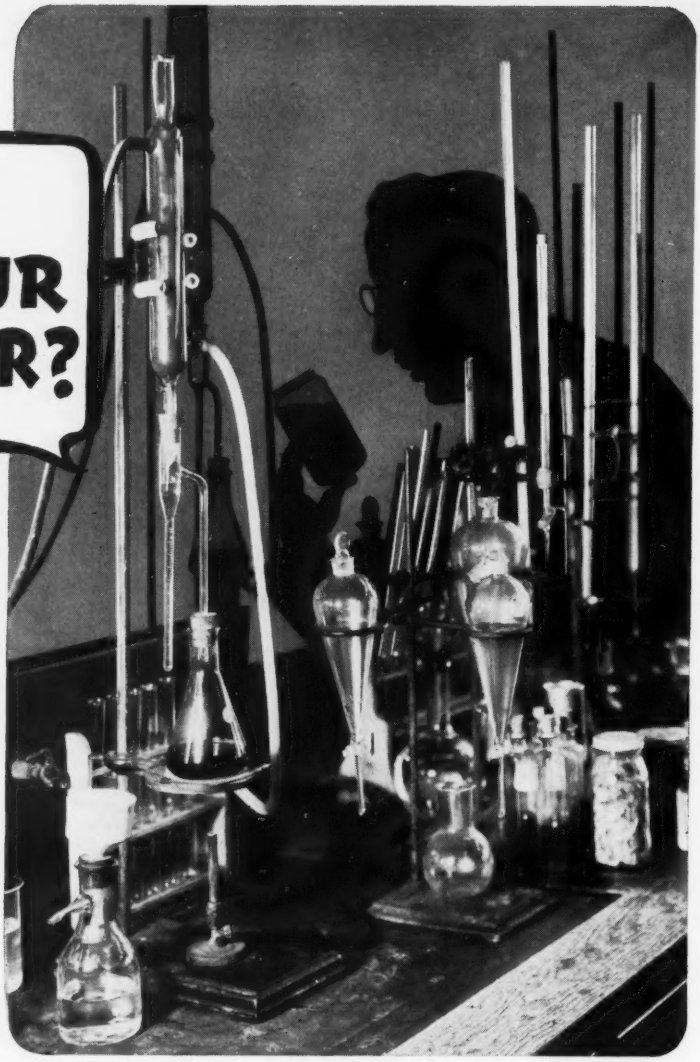
### Bobrick Issues New Catalog

Bobrick Mfg. Co., Los Angeles, has just issued a new catalog describing its line of "Sop-O-zoN" soap dispensers. The catalog is bound in a correspondence folder, convenient for filing and for the addition of new pages as they are issued. The company's complete line of soap dispensing equipment, — liquid dispensers, powdered soap dispensers, and tanks for the gravity feed system are described, together with complete construction and mechanical details for installation for each model. Copies available on request.

### Japanese Soap Industry Suffers

Prices on all soap raw materials in Japan have increased recently to excessive levels due to a rigid control on all imports to that country, according to reports from Tokyo. Prices are far above Anglo-American levels, it is stated. As a result Japanese soap manufacturers have advanced soap prices 20 per cent, with further increases expected. Also, exports of Japanese soaps, which had been on the up-grade, have shown a marked decline recently, it is reported.

# WANT TO IMPROVE YOUR SOAP POWDER?



**IS YOUR** soap powder just average? Give it new pep and sales appeal with P.Q. Silicate of Soda.

Your research will confirm that consumers of soap powders built with P.Q. Silicate get more and better cleaning. This is true because P.Q. Silicates have to greater degree, dirt-suspending powers so that in rinsing the soil is washed away and does not redeposit on the cleaned surface.

P.Q. Silicates are available for either dry mix or wet mix formulae. When you select P.Q., you profit from the years of research which make up P.Q. Silicate Service. Our Technical staff is ready to help you solve a problem. Write us at Philadelphia.

P.Q. Silicates are used in these products

Soap Powders
Dish Washing Compounds
Household Cleaners
Dairy Farm Cleaners
Garage & Service Station Cleaners

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EST. 1831

*General Offices and Laboratory:* 125 South 3rd Street, Philadelphia.
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Reg. U.S. Pat. Off

# P. Q. SILICATES OF SODA

# Contracts Awarded

### Jeffersonville Soap Awards

Hecker Products Corp., New York, was awarded the contract on 460,000 pounds of laundry soap at 3.13c in a recent opening by the U. S. Army Quartermaster at Jeffersonville, Ind. On 10,000 cakes of grit soap, Hunnewell Soap Co., Cincinnati, was awarded the contract at 1.9c per cake. On 5,000 pounds of soap chips and 3,000 pounds of trisodium phosphate, Valentine Laboratories, Chicago, was awarded the contract at 6.05c and 2.4c, respectively.

### Army Air Corps Soap Award

James Good, Philadelphia, was awarded the contract on 138,000 pounds of soft soap at 4.94c in a recent opening by the supply division of the U. S. Army Air Corps, Wright Field, Dayton, O.

### Fort Mason Awards

Los Angeles Soap Co., San Francisco, was awarded the contract on a quantity of toilet soap at a price of 1.449c per cake in a recent opening by the U. S. Army Quartermaster at Fort Mason, San Francisco. On a quantity of metal polish, Imperial Products Co., Philadelphia, was awarded the contract at a price of 7.5c per can. On a quantity of trisodium phosphate, Griffin Chemical Co., San Francisco, was awarded the contract at a price of 3.0875c.

### Recommended on Soap Contracts

Kirkman & Son, Brooklyn, were recommended for the award on a contract for 16,360 pounds of toilet soap at 7.56c in a recent opening by the quartermaster, U. S. Marine Corps, Philadelphia. John T. Stanley Co., New York, was recommended for the award on 5,875 pounds of grit soap at 3.3c. On 1,920 pounds of saddle soap, R. M. Hollingshead Corp., Camden, N. J., was recommended for the award at 10.9c. On 11,170 pounds of hand soap, Larkin Soap Co., Teaneck, N. J., was recommended for the award at 4.3c. On 14,040 cans of caustic soda, Tex-ite Products Corp., New York, was recommended for the contract at 4.74c.

### Fort Sam Houston Awards

Armour & Co., San Antonio, were awarded contracts on 2,400 pounds of chip soap at 7.7c, and 2,400 pounds of soap powder at 2.8c, in a recent opening by the U. S. Army Quartermaster at Fort Sam Houston, Tex.

### Jeffersonville Soap Award

Iowa Soap Co., Burlington, Ia., was awarded the contract on 9,000 pounds of soap chips at 6.32c in a recent opening by the U. S. Army quartermaster at Jeffersonville, Ind., for delivery to Fort Hayes, Columbus, O.

### Low Bidders for Canal Zone

Newell Gutradt Co., San Francisco, was low bidder on 7,500 pounds of laundry soap at $262.50, and 9,000 pounds of salt water soap at $233.10 in a recent opening at Washington by the supply division for the Panama Canal Zone. On 10,000 pounds of soap powder, and 10,000 pounds of trisodium phosphate, Stevens Soap Corp., Brooklyn, was low bidder with quotations of $325 and $394 respectively.

### Post Office Soap Award

John T. Stanley Co., New York, was awarded the contract on 3,000 cakes of grit soap at 3.15c in a recent opening by the U. S. Government Post Office, at Washington.

### Low Soap Bidders

Conray Products Co., New York, was the low bidder on 7,425 pounds of grit soap in a recent opening by the U. S. Post Office Dept., at Washington, with a quotation of 3.39c. On 150,000 pounds of laundry soap, Procter & Gamble Distributing Co., Baltimore, was low bidder with a quotation of 3.06c. On 27,000 pounds of toilet soap, Newell-Gutradt Co., San Francisco, was low bidder with a quotation of 5.4c.

### Low Treasury Dept. Bidders

Armour & Co., Chicago, were low bidders on 5,000 pounds of toilet soap at 8.42c in a recent opening by the Procurement Division of the U. S. Treasury Dept. at Washington. On 495 gallons of liquid cleaner, James Good, Philadelphia, was low bidder at 22.7c.

### Fort Peck Soap Powder Award

Griggs, Cooper & Co., St. Paul, were awarded the contract on 5,000 pounds of soap powder at $160.23 in a recent opening by the supply department of the U. S. Army Engineer Corps, at Fort Peck, Mont.

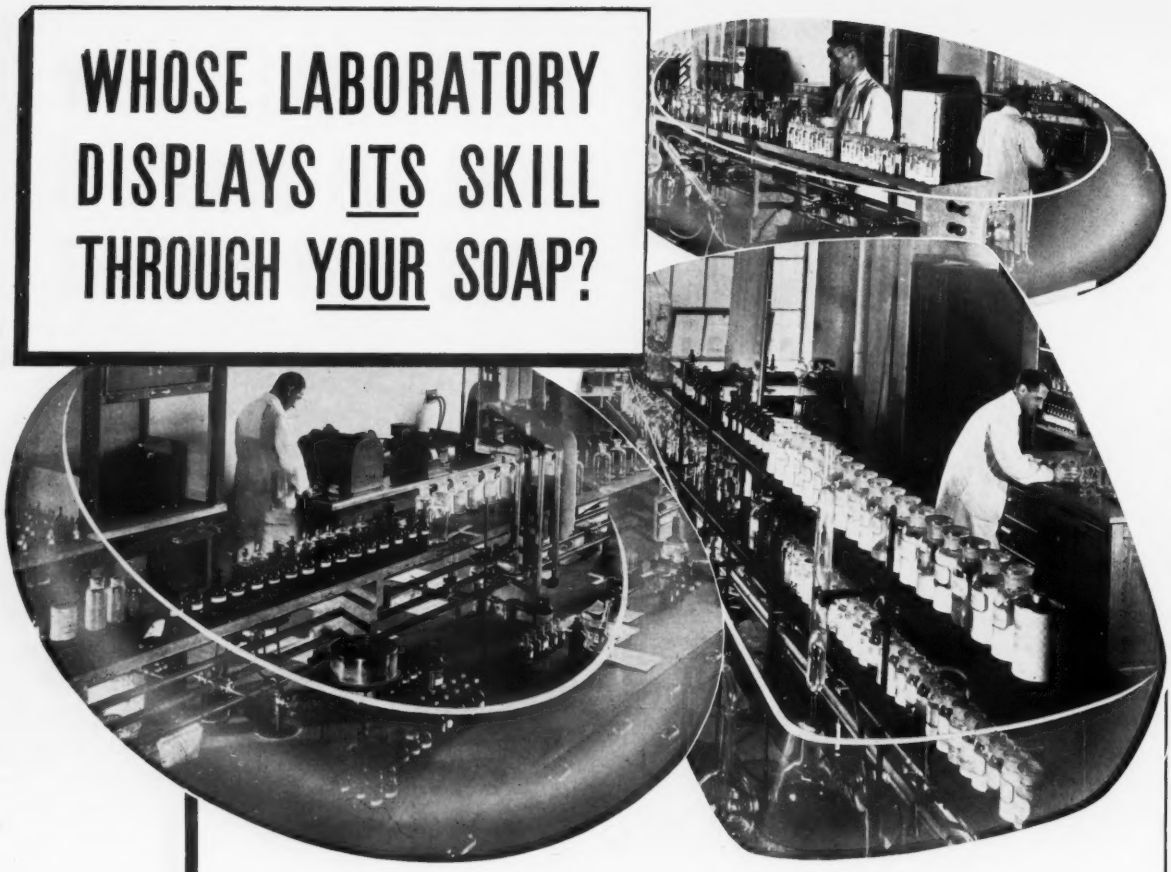
### British Soap Buyers' Guide

The publishers of *Soap Perfumery & Cosmetics*, London, have just issued the 1938 edition of their *Soap Perfumery & Cosmetics Buyer's Guide & Cyclopaedia*. Leading features of the new edition include a review of progress in the soap and allied industries over the past year and a similar review of developments in the perfumery and cosmetic industries. Other articles discuss soap analysis and sampling methods and give suggestions on controlling the quality of soap through Webb's I.N.S. and S.R. factors. A number of useful tables giving laboratory data are included, as well as the usual buyer's guide section, 8¾ by 11¼. Board cover. 230 pages. Price, 10/6.

### Shaving Brush

A shaving brush is made with a hollow handle into which a pliant tube of shaving cream can be fitted, with an arrangement for turning up the end of the tube at it is emptied, and expelling the cream out through a conduit into the interior of the bristles of the shaving brush. Albert R. Green. Canadian Patent No. 373,600.

# WHOSE LABORATORY DISPLAYS ITS SKILL THROUGH YOUR SOAP?



. . . AND is it the practiced, dependable skill of long experience in which you can safely repose your product's chances for success? The answers to these questions, in the opinion of successful soap manufacturers and others whose sales hinge primarily upon scent, outweigh in importance all other considerations. Even in matters of cost, they know it is far wiser to pay a fraction more for their perfume compounds and be sure of quality than to take chances with products of dubious origin or indifferent skill.

That is why we urge manufacturers of soap or any other perfumed preparation to let our laboratories assist in working out practical and appealing odor bases for your products. Make it competitive if you like. Then you will have an opportunity to decide between a fine, custom-made perfume created by FRITZSCHE specialists for your exclusive use and other recommended offerings. If you have a perfume problem pending, why not consult us NOW?

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FACTORIES AT CLIFTON, N. J. AND SEILLANS (VAR) FRANCE

### Foragers Outing June 25

Foragers of America, organization of salesmen in the drug, cosmetic, and allied trades, will hold their annual summer outing at Atlantic Highlands, N. J., June 25. Athletic contests will be held and prizes awarded to winners. Tickets and further particulars can be obtained at Foragers Headquarters, Room 257, Herald Square Hotel, 116 W. 34th St., New York.

### Heads Johnson & Johnson

Arthur R. Clapham, vice-president and general sales manager, Johnson & Johnson, New Brunswick, N. J., has been made president of the company. He succeeds Robert W. Johnson, president for ten years. Arthur B. Hill, former vice president in charge of the field force, succeeds Mr. Clapham. Paige D. L'Hommedieu succeeds Mr. Hill.

### Wants Soap Agency

A concern in Port Louis, Mauritius, is interested in establishing an agency arrangement for the sale of soaps of American manufacture. Interested parties may secure further particulars by addressing the U. S. Bureau of Foreign & Domestic Commerce, Washington, inquiry 6746.

### Stafford Allen Moves

Stafford Allen & Sons, Ltd., British essential oil firm, formerly at Cowper St., Finsburg, London, E. C. 2, England, have moved to larger quarters at 20 to 42 Wharf Road, City Road, London, N. 1. The change of address is part of the company's plan for centralizing its activities.

### Newman Selling Robertson Plant

The soap plant formerly operated at Syracuse, N. Y., by J. T. Robertson Co. has been acquired by Newman Tallow & Soap Machinery Co., Chicago, and will be liquidated immediately.

### Discontinues Soap Manufacture

Cuyahoga Soap Co., Cleveland, has discontinued the manufacture of soap.

# New Trade Marks

The following trade-marks were published in the May issues of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

## Trade Marks Filed

WASH THE WORLD WITH WYP-AWAY—This in shaded letters with drawing of a hand represented as wiping a map of North America, describing soap. No claim is made on the first four words apart from the mark. Filed by Wyp-a-Way Soap Co., Cleveland, June 29, 1937. Claims use since Feb., 1927.

DENTGLO—This in solid script describing cleansing powder for dentures. Filed by Fort Orange Chemical Co., Albany, N. Y., Feb. 25, 1938. Claims use since Jan. 11, 1938.

LAUNDITE—This in solid letters describing fabric cleanser. Filed by William T. Casey, Boston, March 19, 1938. Claims use since Jan. 1, 1938.

CYN—This in solid letters on geometric design describing soap. Filed by James A. Smith, Philadelphia, March 28, 1938. Claims use since March 1, 1938.

WILSON'S FORM-O-DUST—This in solid letters, first word in script, describing insecticides. No claim is made to the words "Dust" or "Wilson's" apart from the mark. Filed by Andrew Wilson, Inc., Springfield, N. J., Jan. 12, 1938. Claims use since March 15, 1936.

ACMETOL—This in solid letters describing treatment for Athlete's Foot. Filed by H. E. Matheny, Charleston, W. Va., Jan. 28, 1938. Claims use since March 12, 1938.

D-O-D—This in solid letters describing cattle antiseptic. Filed by C. Nelson Smith Co., West Allis, Wis., March 1, 1938. Claims use since 1898.

AEROWAX—This in solid letters describing wax polish. Filed by Midway Chemical Co., Jersey City, N. J., March 4, 1938. Claims use since June 30, 1932.

COLGATE—This in solid letters describing glycerine. Filed by Colgate-Palmolive-Peet Co., Jersey City, N. J., March 12, 1938. Claims use since Feb. 1, 1937.

BOMTEX—This in solid letters describing antiseptic. Filed by Bomtex Co., Kansas City, March 14, 1938. Claims use since Jan. 12, 1938.

MARVALO—This in outline letters describing dry cleaners' solvents. Filed by Filtrol Co. of California, Los Angeles, March 14, 1938. Claims use since Feb. 21, 1938.

INTHOL—This in solid letters describing antiseptic. Filed by Poloris Co., New York, March 17, 1938. Claims use since Dec., 1925.

P-KAY PLATE KLEEN—This in script and solid letters describing dentifrice. No claim is made to the last two words apart from the mark. Filed by Plate Kleen Products Co., Dayton, O., Jan. 24, 1938. Claims use since September, 1931.

ESCORT—This in outline letters describing cleansing pads. Filed by Escort Co., Chicago, Feb. 9, 1938. Claims use since Jan. 17, 1938.

HETONE—This in solid letters describing antiseptic. Filed by Astone Products Co., Lansdale, Pa., March 10, 1938. Claims use since June 1, 1932.

THE KWIK WAY—This in solid letters on geometric design describing silver polish. No claim is made to the words apart from the mark. Filed by Kwik Products Co., San Antonio, Tex., June 12, 1934. Claims use since Nov. 2, 1932.

VURNSILV—This in solid letters describing general antiseptic. Filed by Percy Edson Snell, New York, Feb. 17, 1938. Claims use since Feb. 16, 1938.

SANTOBANE—This in stencilled letters describing insecticides and disinfectants. Filed by Monsanto Chemical Co., St. Louis, Feb. 21, 1938. Claims use since Dec., 1937.

ORLOFF—This in ornamental, circular design, with drawing of two-headed eagle, describing bath salts. Filed by Jean Vivaudou Co., New York, Feb. 23, 1938. Claims use since Feb., 1935.

CHESELINE—This in solid letters describing shampoo. Filed by Chesebrough Mfg. Co., New York, Feb. 28, 1938. Claims use since Feb. 16, 1938.

LAUROLIZED—This in solid letters describing tooth paste. Filed by Lambert Pharmacal Co., Wilmington, Del., March 4, 1938. Claims use since Feb. 21, 1938.

VITROLIN—This in solid letters describing liquid polish. Filed by Wil-Meyer Co., New York, Feb. 8, 1938. Claims use since Feb. 5, 1938.

KLU-KO—This in solid letters describing cleaning preparation for artificial dentures. Filed by I. Putnam, Inc., Elmira, N. Y., March 4, 1938. Claims use since Feb. 17, 1938.

LA-TEEN—This in solid letters describing shampoo. Filed by Marathon Laboratories, Inc., Newark, N. J., Aug. 30, 1937. Claims use since Sept. 17, 1937.

MORGAN'S DENTA-KLENZ—This in solid letters describing compound for cleaning dental plates. No claim is made to the word "Klenz" apart from the mark. Filed by Morgan-Sabalol Products, Inc., New York, March 12, 1937. Claims use since Jan., 1937.

CLE-PRO—This in semi-solid letters on ornamental design describing soap. Filed by Cle-Sof Products, Chicago, Nov. 10, 1937. Claims use since April 26, 1935.

L. E. THOMPSON'S KLEEN-ET CLEANER—This in solid letters describing soap product. No claim is made to the word "Cleaner" apart from the mark. Filed by Kleen-Et Products Co., Mansfield, O., Feb. 14, 1938. Claims use since Feb. 1, 1937.

SODOX—This in solid letters describing herbicides. Filed by Cali-

fornia Spray-Chemical Corp., Richmond, Calif., Feb. 5, 1938. Claims use since Jan. 25, 1938.

PHENOX—This in solid letters describing herbicides. Filed by California Spray Chemical Corp., Richmond, Calif., Feb. 5, 1938. Claims use since Jan. 25, 1938.

STANOX—This in solid letters describing herbicides. Filed by California Spray Chemical Corp., Richmond, Calif., Feb. 5, 1938. Claims use since Jan. 25, 1938.

RAT LUNCHES—This in solid letters accompanied by a drawing of two rats describing vermin exterminator. Filed by Rat Lunches Co., Carroll, Ia., March 8, 1938. Claims use since Sept., 1933.

CARPOLE—This in stencilled letters describing laundry detergents. Filed by Warwick Chemical Co., West Warwick, R. I., Nov. 11, 1937. Claims use since Oct. 20, 1937.

PETROSOL—This in solid letters describing cleaning fluid. Filed by Petroleum Solvents Co., Butler, Pa., Dec. 28, 1937. Claims use since Sept. 1, 1935.

C-LITE—This in solid letters describing metal polish. Filed by C-Lite Products, Goshen, Ind., Feb. 18, 1938. Claims use since Aug. 19, 1937.

BASOL—This in solid letters describing cleaner for painted surfaces. Filed by Basol Laboratories, Greenville, S. C., Feb. 28, 1938. Claims use since Aug., 1931.

CALGON BOUQUET — This in solid letters describing perfumed water softening chemical. Filed by Calgon, Inc., Pittsburgh, July 16, 1937. Claims use since July 8, 1937.

EFFACHLOR TABLETS—This in outline letters describing disinfectant. Filed by Effentab Products, Inc., New Rochelle, N. Y., March 22, 1938. Claims use since Nov. 1, 1937.

DORMASOL—This in solid letters describing insecticide. Filed by General Chemical Co., New York, March 22, 1938. Claims use since Feb. 9, 1938.

SUFFONE—This in solid letters describing insecticide. Filed by Kilgore Development Corp., Washington, March 24, 1938. Claims use since Nov. 23, 1936.

## Trade Marks Granted

355,903. Insecticides. Sherwin-Williams Co., Cleveland. Filed Oct. 28, 1937. Serial No. 399,060. Published Jan. 4, 1938. Class 6.

355,918. Antiseptic. Jockers & Son, Wichita, Kansas. Filed Nov. 1, 1937. Serial No. 399,190. Published Jan. 18, 1938. Class 6.

355,919. Dentifrice. Vick Chemical Co., New York. Filed Nov. 1, 1937. Serial No. 399,212. Published Jan. 11, 1938. Class 6.

355,943. Preparation Scouring. Sterling Products Co., Easton, Pa. Filed Nov. 10, 1937. Serial No. 399,579. Published Jan. 4, 1938. Class 6.

355,958. Antiseptic Hand Creams. H. A. Montgomery Co., Detroit. Filed Nov. 17, 1937. Serial No. 399,850. Published Jan. 18, 1938. Class 6.

355,964. Insecticides. John Opitz, Inc., Long Island City, N. Y. Filed Nov. 19, 1937. Serial No. 399,937. Published Jan. 4, 1938. Class 6.

356,053. Toilet Soaps. Rain Lab, Inc., New York. Filed June 23, 1937. Serial No. 394,424. Published Sept. 7, 1937. Class 4.

356,109. Cleaning Solvents. Standard Oil Company of California, San Francisco. Filed Nov. 12, 1937. Serial No. 399,686. Published Feb. 1, 1938. Class 4.

356,235. Cleaning Compounds. Turco Products, Inc., Los Angeles. Filed Nov. 12, 1937. Serial No. 399,690. Published Feb. 8, 1938. Class 4.

356,236. Soaps. R. H. Macy & Co., New York. Filed Nov. 13, 1937. Serial No. 399,717. Published Feb. 8, 1938. Class 4.

356,264. Dry Cleaning Soap. Midland Chemical Laboratories, Inc., Dubuque, Ia. Filed December 4, 1937. Serial No. 400,462. Published Feb. 8, 1938. Class 4.

356,265. Aluminum Cleanser. Marcia Blier, New York. Filed Dec. 6, 1937. Serial No. 400,491. Published Feb. 8, 1938. Class 4.

356,277. Saponaceous Compounds. Shulton, Inc., New York. Filed Dec. 16, 1937. Serial No. 400,928. Published Feb. 8, 1938. Class 4.

356,278. Saponaceous Compounds. Shulton, Inc., New York. Filed Dec. 16, 1937. Serial No. 400,931. Published Feb. 8, 1938. Class 4.

356,279. Saponaceous Compounds. Shulton, Inc., New York. Filed Dec. 16, 1937. Serial No. 400,933. Published Feb. 8, 1938. Class 4.

356,282. Saponaceous Compounds. Shulton, Inc., New York. Filed Dec. 18, 1937. Serial No. 401,090. Published Feb. 8, 1938. Class 4.

356,335. Insecticides. Commercial Soap & Chemical Co., San Francisco. Filed July 10, 1937. Serial No. 395,065. Published Jan. 25, 1938. Class 6.

356,339. Spot Remover. B. F. Goodrich Co., Akron, O. Filed Aug. 6, 1937. Serial No. 396,071. Published Feb. 15, 1938. Class 4.

356,350. Germicides. Main Laboratories, Inc., Olympia, Wash. Filed Sept. 2, 1937. Serial No. 397,038. Published Jan. 25, 1938. Class 6.

356,393. Antiseptic. E. R. Squibb & Sons, New York. Filed Nov. 11, 1937. Serial No. 399,626. Published Feb. 8, 1938. Class 6.

356,416. Preparation for Athlete's Foot. Hood Pharmacal Co., Washington. Filed Nov. 24, 1937. Serial No. 400,105. Published Feb. 8, 1938. Class 6.

356,424. Liquid Insecticides. Andrew Wilson, Inc., Springfield, N. J. Filed Nov. 29, 1937. Serial No. 400,267. Published Feb. 8, 1938. Class 6.

356,432. Insecticides. Philadelphia Chemical Co., Philadelphia. Filed Dec. 1, 1937. Serial No. 400,352. Published Feb. 8, 1938. Class 6.

356,436. Antiseptic. Mayfair Pharmacal Co., Dayton, O. Filed Dec. 2, 1937. Serial No. 400,385. Published Feb. 8, 1938. Class 6.

356,454. Disinfectants. Electro Ball Co., Dallas. Filed Dec. 9,

(*Turn to Page* 147)

# Raw Material Markets

**(As of May 27, 1938)**

NEW YORK — Raw material prices for the soap and sanitary chemicals industry continued to move lower in the period just ended. Transactions were generally limited to small or moderate quantities, weakness in the market for securities and uncertainty concerning political affairs making consumers disposed to a very conservative course in purchasing operations. Among the oils and fats, babassu, coconut and corn oils each dropped 1/8 cent per pound. Tallow declined 1/4 cent per pound. Olive foots were off 1/4 cent per pound, and palm oil went down 1/2 cent per pound. In the list of essential oils, a deflationary movement in the exchange value of the French franc and keen competition for business among sellers in the absence of an improvement in demand, resulted in generally lower prices.

## OILS AND FATS

### Olive Oil

The demand for olive oil and olive oil foots during the period was limited to small lots for the immediate requirements of consumers. At the close, quotations on olive foots registered a decline of 1/4 cent per pound. Olive oil remained at from 90 cents to 95 cents per gallon.

### Palm Oil

Quotations for palm oil moved 1/2 cent per pound lower, the easier tone being due to the absence of any improvement in demand and a downward trend in the prices of other commodities. Palm kernel oil was firmer, and was quoted 1/4 cent per pound higher.

### Coconut Oil

The tone of the market was steady during the early part of the period due to a reported scarcity of supplies of copra. Although there were few transactions, sellers were not in a position to push matters in view of the copra scarcity. Towards the close of the period, however, the situation in the copra market was reported to be easier, consequently, quotations on crude coconut oil were promptly shaded 1/8 cent per pound. The volume of business was said to be unimportant. Quotations on babassu, corn and linseed oils followed suit, and declined 1/4 cent per pound. The reduction in the price of corn oil was influenced by the downward trend in prices of competing products, while the lower price of linseed oil was largely the result of competition among sellers.

### Tallow

By the end of the period, tallow registered a decline in price of 1/4 cent per pound, putting the market at 4 7/8 cents per pound delivered, with the volume of trading on this basis reported to have been light. In the western market, prime quality tallow was particularly under pressure with various prices reported, depending on the quality and delivery point, at as low as 4 3/4 cents for the mid-west, with buyers still showing no aggressive interest. The price of inedible tallow has declined 4 1/2 cents per pound, or nearly 50 per cent from the high levels of early 1937. Meantime, stocks have increased due to a greater yield of cattle fat, greater factory production of inedible tallow, and a decrease in the amount of tallow consumed by the soap industry. Grease declined 1/8 cent per pound, due to the influence of the reduction of tallow prices.

## PERFUMING MATERIALS

A crisis in the French exchange during the early part of the period was an important development, since it will probably have an early and direct influence on important oils in the essential oils market. The French franc dropped in dollar value to the lowest point since October, 1926. Numerous essential oils and a few aromatic chemicals are bought in francs, hence the devaluation should affect replacement costs of all French merchandise. Competition for business in the essential oils market has in the meantime been very keen. That plus a steady, if conservative volume of new business, has been persistent enough to reduce prices on a number of items.

Among the list of essential oils which registered lowered prices for the latter reason by the close of the period were the following: Anise, down 20 cents per pound to a basis of from 80 to 90 cents; bergamot, down 15 cents per pound, quoted at from $3.85 to $4.00; Cade, in cans, down 10 cents per pound, quoted at 45 to 50 cents; Cajeput, native, down 15 cents per pound, quoted at 50 to 66 cents; cassia, down 5 cents per pound, quoted at $1.00 to $1.05; geranium, African, down 25 cents per pound, quoted at $3.25 to $4.50; geranium, Bourbon, down 55 cents, quoted at $2.65 to $3.00; sandalwood, down 45 cents, quoted at $4.75 to $4.80.

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### Opens Philadelphia Office

Columbia Alkali Corp., New York, opened a branch office in Philadelphia, June 1. The new office is located at 3034 North 16th Street, and will cover eastern Pennsylvania, southern New Jersey, Delaware, Maryland, Virginia, and the District of Columbia. Charles F. Bingham, a member of Columbia's technical service department for a number of years, is in charge.

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### Cotton Oil Stocks

Stocks of crude cottonseed oil on hand in United States as of April 30, 1938, totaled 133,010,043 pounds, as compared with 67,788,768 pounds on the same date in 1937.

# Raw Material Prices

**(As of May 27, 1938)**

**Minimum Prices are for car lots and large quantities. Price range represents variation in quotations from different suppliers and for varying quantities.**

## Chemicals

| | | | |
|---|---|---|---|
| Acetone, C. P., drums | lb. | $ .05¾ | $ .06¼ |
| Acid, Boric, bbls., 99½% | ton | 95.00 | 105.00 |
| Cresylic, drums | gal. | .79 | .81 |
| Low boiling grade | gal. | .87 | .89 |
| Oxalic, bbls. | lb. | .10¾ | .12 |
| Adeps Lanae, hydrous, bbls. | lb. | .16 | .18 |
| Anhydrous, bbls. | lb. | .17½ | .19 |
| Alcohol, Ethyl. U. S. P., bbls. | gal. | 4.04 | 4.16 |
| Complete Denat., SD 1, drums, ex. | gal. | .31 | .33 |
| Alum. Potash lump | lb. | .036 | .039 |
| Ammonia Water, 26°, drums | lb. | .02¼ | .02½ |
| Ammonium Carbonate, tech., bbls. | lb. | .08 | .12½ |
| Bentonite 1, works | ton | — | 16.00 |
| Bentonite 2, works | ton | — | 11.00 |
| Bleaching Powder, drums | 100 lb. | 2.25 | 3.35 |
| Borax, pd., cryst., bbls., kegs | ton | 47.00 | 67.00 |
| Carbon Tetrachloride, car lots | lb. | — | .05¼ |
| L. C. L. | lb. | .05¾ | .08½ |
| Caustic, see Soda Caustic. Potash Caustic | | | |
| China Clay, filler | ton | 10.00 | 25.00 |
| Cresol, U. S. P., drums | lb. | .12 | .12½ |
| Creosote Oil | gal. | .13½ | .14½ |
| Feldspar (200 to 325 mesh) | ton | 14.00 | 15.00 |
| Formaldehyde, bbls. | lb. | .05¾ | .06¼ |
| Fullers Earth | ton | 10.00 | 30.00 |
| Glycerine, C. P., drums | lb. | .15½ | .16 |
| Dynamite. drums | lb. | .15½ | .16 |
| Saponification, drums | lb. | .10½ | .11 |
| Soap, lye, drums | lb. | .09½ | .10 |
| Hexalin, drums | lb. | — | .30 |
| Kieselguhr, bags | ton | — | 35.00 |
| Lanolin, see Adeps Lanae. | | | |
| Lime, live, bbls. | per bbl. | — | 2.45 |
| Mercury Bichloride, kegs. | lb. | .99 | 1.13 |
| Naphthalene, ref. flakes, bbls. | lb. | .06¾ | .07 |
| Nitrobenzene (Wyrhane) drums | lb. | .07¼ | .09 |
| Paradichlorbenzene, bbls., kegs | lb. | .12½ | .15½ |
| Petrolatum, bbls. (as to color) | lb. | .02¾ | .08⅛ |
| Phenol (Carbolic Acid), drums | lb. | .14½ | .15½ |
| Pine Oil, bbls. | gal. | .52 | .59 |
| Potash, Caustic, drums | lb. | .07 | — |
| Flake | lb. | .07¼ | .07½ |
| Potassium Carbonate, solid | lb. | .06½ | .06¾ |
| Liquid | lb. | .03 | .03½ |
| Pumice Stone, powder | 100 lb. | 3.00 | 4.00 |
| Rosins (600 lb. bbls. gross for net)— | | | |
| Grade B to H, basis 280 lbs. | bbl. | 4.70 | 5.65 |
| Grade K to N | bbl. | 5.65 | 6.25 |
| Grade WG and X | bbl. | 6.90 | 7.60 |
| Wood FF Spot | bbl. | 5.25 | 6.00 |
| Rotten Stone, pwd. bbls. | lb. | .02½ | .04½ |
| Silica | ton | 20.00 | 27.00 |
| Soap, Mottled | lb. | .04⅛ | .04⅜ |
| Olive Castile, bars | lb. | .26 | .35 |
| Olive Castile, powder | lb. | .30 | .35 |
| Powdered White, Neutral | lb. | .19½ | .21½ |
| Olive Oil Foot, bars, 68-70% | lb. | .09 | .09½ |
| Green, U. S. P. | lb. | .08 | .09½ |
| Tallow Chips, 88% | lb. | .08¼ | .08⅜ |
| Soda Ash, cont., wks., bags, bbls. | 100 lb. | 1.08 | 1.35 |
| Car lots, in bulk | 100 lb. | — | .90 |
| Soda Caustic, cont., wks., solid | 100 lb. | — | 2.30 |
| Flake | 100 lb. | — | 2.70 |
| Liquid, tanks | 100 lb. | — | 1.95 |
| Soda Sal., bbls. | 100 lb. | $1.10 | $1.30 |
| Sodium Chloride (Salt) | ton | 15.30 | 15.70 |
| Sodium Fluoride, bbls. | lb. | .07¼ | .08¾ |
| Sodium Hydrosulphite, bbls. | lb. | .16 | .17 |
| Sodium Silicate, 40 deg., drum | 100 lb. | .80 | 1.20 |
| Drums, 52 deg. wks. | 100 lb. | 1.40 | 1.80 |
| Tar Acid Oils, 15-25% | gal. | .22½ | .29½ |
| Triethanolamine | lb. | .20 | .22 |
| Trisodium Phosphate, bags, bbls. | lb. | .02 | .03 |
| Zinc Oxide, lead free | lb. | .06½ | .07¾ |
| Zinc Stearate, bbls. | lb. | .21 | .23 |

## Oils — Fats — Greases

| | | | |
|---|---|---|---|
| Babassu, tanks, futures | lb. | .06⅜ | — |
| Castor, No. 1, bbls. | lb. | .09¾ | .10½ |
| No. 3, bbls. | lb. | .09¼ | .10 |
| Coconut (without excise tax) | | | |
| Manila, Tanks. N. Y. | lb. | .03⅜ | — |
| Tanks, Pacific Coast, futures | lb. | .03⅛ | — |
| Fatty Acids | lb. | .09½ | .10 |
| Copra. bulk, coast | lb. | .0200 | Nom. |
| Corn, tanks, mills | lb. | .07 | .07⅛ |
| Fatty Acids | lb. | .06 | .06½ |
| Cottonseed, crude, tanks, mill | lb. | — | .06⅞ |
| PSY, futures | lb. | .07½ | .07¾ |
| Fatty Acids | lb. | .0635 | .0735 |
| Soap stock 60-62% | lb. | .02⅞ | .03⅛ |
| Soap stock 65% | lb. | .03⅞ | .04⅛ |
| Foots (50% basis) | lb. | .01⅜ | .01½ |
| Greases, choice white bbls., f.o.b. | | | |
| Chicago | lb. | .05¼ | Nom. |
| Yellow | lb. | .03⅞ | .04 |
| House | lb. | .03⅞ | .04 |
| Lard Oil. | | | |
| Extra, bbls. | lb. | — | .09⅛ |
| Extra, No. 1, bbls. | lb. | — | .08⅞ |
| No. 2, bbls. | lb. | — | .08¼ |
| Linseed, raw, bbls. | lb. | .0920 | .0930 |
| Tanks, raw | lb. | .0860 | .0870 |
| Boiled, 5 bbl. lots | lb. | .1000 | .1010 |
| Oleo Oil, No. 1, bbls., N. Y. | lb. | .08½ | — |
| No. 2, bbls., N. Y. | lb. | .08 | — |
| Olive, denatured, bbls., N. Y. | gal. | .90 | .95 |
| Foots bbls., N. Y. | lb. | .08 | .08¼ |
| Palm, shipment | lb. | .03 | — |
| Palm Kernel, shipment | lb. | .0415 | — |
| Red Oil, distilled, bbls. | lb. | .08⅜ | Nom. |
| Saponified, bbls. | lb. | .08⅜ | Nom. |
| Tanks | lb. | .07½ | Nom. |
| Sesame Oil, dms. | lb. | .10¼ | — |
| Soya Bean, domestic tanks, crude | lb. | .0600 | .0650 |
| Stearic Acid. | | | |
| Double pressed | lb. | .11 | .12 |
| Triple pressed, bgs. | lb. | .13¾ | .14¾ |
| Stearine, oleo, bbls. | lb. | .05¾ | .06 |
| Tallow, special, f.o.b. plant | lb. | .04⅜ | — |
| City, ex. loose, f.o.b. plant | lb. | .04⅞ | — |
| Tallow oils, acidless, tanks, N. Y. | lb. | .08 | — |
| Bbls., c/l N. Y. | lb. | — | .08½ |
| Teaseed Oil, crude | lb. | .07 | .07¼ |
| Whale, refined | lb. | .0940 | .1000 |

(As of May 27, 1938)

## Essential Oils

| | | | |
|---|---|---|---|
| Almond, Bitter, U.S.P. | lb. | $2.25 | $2.75 |
| Bitter, F. F. P. A. | lb. | 2.00 | 2.50 |
| Sweet, cans | lb. | .65 | .68 |
| Anise, cans, U.S.P. | lb. | .80 | .90 |
| Bay tins | | 1.35 | 1.50 |
| Bergamot, coppers | lb. | 3.85 | 4.00 |
| Artificial | lb. | 1.25 | 1.30 |
| Birch Tar, rect. tins | lb. | .65 | .70 |
| Crude, tins | lb. | .14 | .17 |
| Bois de Rose, Brazilian | lb. | 1.55 | 1.60 |
| Cayenne | lb. | 1.50 | 1.75 |
| Cade, cans | lb. | .45 | .50 |
| Cajeput, native, tins | lb. | .50 | .66 |
| Calamus, tins | lb. | 3.75 | 4.00 |
| Camphor, Sassy, drums | lb. | .17 | .18 |
| White, drums | lb. | .17 | .18 |
| Cananga, native, tins | lb. | 1.40 | 1.45 |
| Rectified, tins | lb. | 2.00 | 2.05 |
| Caraway Seed | lb. | 1.90 | 2.00 |
| Cassia, Redistilled, U.S.P. | lb. | 1.00 | 1.05 |
| Cedar Leaf, tins | lb. | .75 | .80 |
| Cedar Wood, light, drums | lb. | .28 | .30 |
| Citronella, Java, drums | lb. | .38 | .40 |
| Citronella, Ceylon, drums | lb. | .35 | .35½ |
| Clove, U.S.P., tins | lb. | 1.02 | — |
| Eucalyptus, Austl., U.S.P., cans | lb. | .41 | .43 |
| Fennel, U. S. P., tins | lb. | 1.20 | 1.30 |
| Geranium, African, cans | lb. | 3.25 | 4.50 |
| Bourbon, tins | lb. | 2.65 | 3.00 |
| Turkish | lb. | 2.05 | 2.75 |
| Hemlock, tins | lb. | 1.05 | 1.10 |
| Lavender, U.S.P., tins | lb. | 3.75 | 5.25 |
| Spike, Spanish, cans | lb. | 1.05 | 1.10 |
| Lemon, Ital., U.S.P. | lb. | 2.90 | 3.20 |
| Cal. | lb. | 2.50 | — |
| Lemongrass, native, cans | lb. | .38 | .40 |
| Linaloe, Mex., cases | lb. | 1.25 | 1.30 |
| Nutmeg, U.S.P., tins | lb. | 1.20 | 1.25 |
| Orange, Sweet, W. Ind., tins | lb. | 1.95 | 2.00 |
| Italian cop | lb. | 2.25 | 3.00 |
| Distilled | lb. | — | .90 |
| Cal. | lb. | 1.50 | 1.75 |
| Origanum, cans, tech | lb. | .90 | 1.60 |
| Palmarosa | lb. | 2.05 | 2.25 |
| Patchouli | lb. | 3.75 | 8.00 |
| Pennyroyal, dom. | lb. | 1.40 | 1.45 |
| Imported | lb. | 1.35 | 1.40 |
| Peppermint, nat., cans | lb. | 2.05 | 2.30 |
| Redis., U.S.P., cans | lb. | 2.30 | 2.50 |
| Petitgrain, S. A., tins | lb. | 1.00 | 1.05 |
| Pine Needle, Siberian | lb. | .95 | 1.00 |
| Rose, Natural | oz. | 5.25 | 22.50 |
| Artificial | oz. | 2.00 | 8.00 |
| Rosemary, Spanish, tins | lb. | .56 | .75 |
| drums | lb. | .51 | .70 |
| Sandalwood, E. Ind., U.S.P. | lb. | 4.75 | 4.80 |
| Sassafras, U.S.P. | lb. | 1.00 | 1.05 |
| Artificial, drums | lb. | .37 | .38 |
| Spearmint, U.S.P. | lb. | 1.60 | 1.70 |
| Thyme, red, U.S.P. | lb. | .85 | 1.25 |
| White, U.S.P. | lb. | .85 | 1.45 |
| Vetivert, Bourbon | lb. | 4.35 | 16.50 |
| Ylang Ylang, Bourbon | lb. | 3.50 | 6.00 |

## Aromatic Chemicals

| | | | |
|---|---|---|---|
| Acetophenone, C. P. | lb. | $1.05 | $1.45 |
| Amyl Cinnamic Aldehyde | lb. | 2.00 | 2.25 |
| Anethol | lb. | 1.10 | 1.20 |
| Benzaldehyde, tech. | lb. | .60 | .70 |
| U. S. P. | lb. | .85 | .95 |
| Benzyl, Acetate | lb. | .44 | .49 |
| Alcohol | lb. | .63 | .68 |
| Citral | lb. | 1.40 | 3.10 |
| Citronellal | lb. | .75 | .80 |
| Citronellol | lb. | 1.75 | 1.80 |
| Citronellyl Acetate | lb. | 4.50 | 7.00 |
| Coumarin | lb. | 3.00 | 4.65 |
| Cymene, drums | gal. | .90 | 1.25 |
| Diphenyl oxide | lb. | .50 | .55 |
| Eucalyptol, U. S. P. | lb. | .58 | .60 |
| Eugenol, U.S.P. | lb. | 2.10 | 2.55 |
| Geraniol, Domestic | lb. | .67 | 3.00 |
| Imported | lb. | 2.00 | 3.00 |
| Geranyl Acetate | lb. | 1.20 | 2.50 |
| Heliotropin | lb. | 1.80 | 2.20 |
| Hydroxycitronellal | lb. | 2.00 | 2.50 |
| Indol, C. P. | oz. | 2.00 | 2.13 |
| Ionone | lb. | 1.30 | 4.05 |
| Iso-Eugenol | lb. | 3.00 | 4.25 |
| Linalool | lb. | 2.10 | 6.30 |
| Linalyl Acetate | lb. | 1.35 | 2.25 |
| Menthol | lb. | 3.00 | 3.10 |
| Methyl Acetophenone | lb. | 2.50 | 3.00 |
| Anthranilate | lb. | 2.10 | 2.30 |
| Paracresol | lb. | 4.50 | 6.00 |
| Salicylate, U.S.P. | lb. | .40 | .45 |
| Musk Ambrette | lb. | 3.25 | 3.65 |
| Ketone | lb. | 3.40 | 3.80 |
| Xylene | lb. | 1.00 | 1.25 |
| Phenylactaldehyde | lb. | 2.25 | 3.50 |
| Phenylacetic Acid, 1 lb. bot. | lb. | 1.85 | 3.25 |
| Phenylethyl Alcohol, 1 lb. bot. | lb. | 2.70 | 4.25 |
| Rhodinol | lb. | 7.60 | 8.60 |
| Safrol | lb. | .50 | .52 |
| Terpineol, C. P., 1000 lb. drs. | lb. | .23 | — |
| Cans | lb. | .25 | — |
| Terpinyl Acetate, 25 lb. cans | lb. | .77 | 1.00 |
| Thymol, U.S.P. | lb. | 1.50 | 1.55 |
| Vanillin, U.S.P. | lb. | 2.60 | 2.85 |
| Yara Yara | lb. | 1.25 | 1.50 |

## Insecticide Materials

| | | | |
|---|---|---|---|
| Insect Powder, bbls. | lb. | .27 | .28 |
| Concentrated Extract | | | |
| 5 to 1 | gal. | 1.80 | 1.90 |
| 20 to 1 | gal. | 6.70 | 6.80 |
| 30 to 1 | gal. | 9.85 | 10.00 |
| Derris, powder—4% | lb. | .33 | .37 |
| Derris, powder—5% | lb. | .39 | .43 |
| Cube, powder—4% | lb. | .23½ | .28½ |
| Cube, powder—5% | lb. | .28 | .33 |

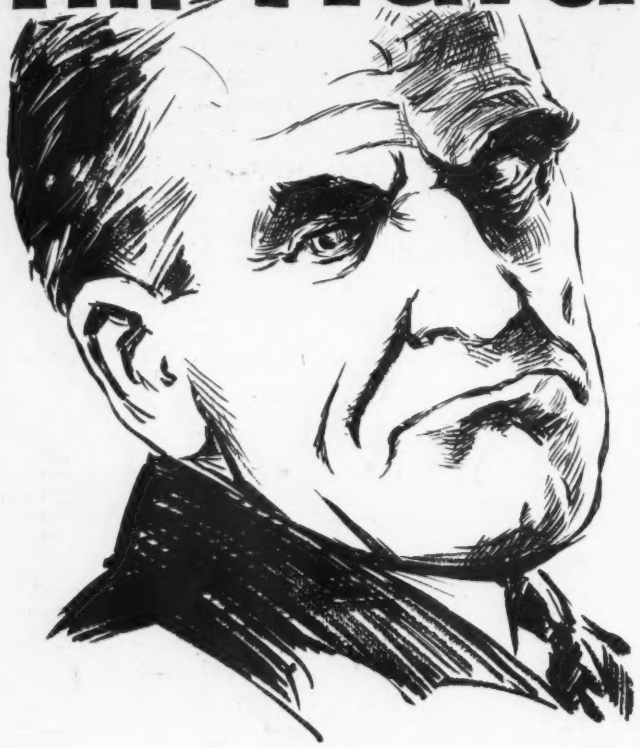
## Gums

| | | | |
|---|---|---|---|
| Arabic, Amb. Sts. | lb. | .10¼ | .10¾ |
| White, powdered | lb. | .13½ | .14 |
| Karaya, powdered No. 1 | lb. | .14½ | .23 |
| Tragacanth, Aleppo, No. 1 | lb. | 2.75 | 3.00 |
| Flake | lb. | .50 | 1.00 |

## Waxes

| | | | |
|---|---|---|---|
| Bees, white | lb. | .37 | .39 |
| African, bgs. | lb. | .24 | .25½ |
| Refined, yel. | lb. | .29 | .32 |
| Candelilla, bgs. | lb. | .14½ | .15 |
| Carnauba, No. 1 | lb. | .37 | .37½ |
| No. 2 N. C. | lb. | .36 | .36½ |
| No. 3, chalky | lb. | .32½ | .33 |
| Ceresin, yellow | lb. | .08½ | .11½ |
| Paraffin ref. 125-130 | lb. | .0435 | .0455 |

# I'm Hard Boiled



**What if I am a hard boiled buyer? Fortunately, there's no law yet about what and what not to buy. I'll admit I'm a tough man to please but once "sold" on a product you can bet it has special merit.**

**Only a short time ago we switched from a more expensive oil to INDUSOIL. It took me a long time before I was convinced; Industrial's staff had to prove to me that a refined fatty acid, such as INDUSOIL, would work in my process. But they did, and now I'm the most contented buyer imaginable—using INDUSOIL, which is less expensive, and still producing the quality products for which our company is noted.**

## INDUSOIL

Excellent as a blend with red oil for textile soaps and can be used with red oil for most other applications required of red oil, including cutting oils, drawing compounds, soluble oils, pine scrubs, etc.

A blend of refined fatty acids with the following specifications:

| AVERAGE QUALITY OF INDUSOIL..... March 15, 1937 | | |
|---|---|---|
| Specific Gravity 60°/60°F. ..... | 0.95-0.98 | |
| Viscosity (Saybolt) | | |
| @ 100°F. ..... | 300-400 sec. | |
| @ 210°F. ..... | 55- 65 sec. | |
| Flash Point ..... | 350-385°F | |
| Fire Point ..... | 410-430°F | |
| Moisture ..... | Practically None | |
| Ash ..... | Practically None | |
| Completely Soluble in Petroleum Ether ..... | | |
| Acid No. ..... | 170-185 | |
| Saponification Value ..... | 170-185 | |
| Color (Rosin Scale) ..... | G-I | |
| Fatty Acid ..... | 55-65% | Avg. about 60% |
| Rosin Acids ..... | 28-35% | Avg. about 32% |
| Sterols ..... | 6-10% | Avg. about 8% |

## LIQRO

A blend of crude pine fatty acids, with the following specifications:

| | | | |
|---|---|---|---|
| Acid No. ..... | 150 to 160 | Fatty Acids ... | 35 to 45% |
| Rosin Acids .. | 40 to 50% | Sterols ..... | 15 to 20% |

This material is available in large quantities both from our Covington, Va., mill and our new mill at Charleston, S. C.

Indicated uses are for asphalt emulsions, cutting oils, low priced soaps, and many other applications where a low price fat is a requirement.

Present prices on contract F.O.B. Charleston, S. C.

Tank Cars .....$35.00 per ton
Carloads, in drums ....$45.00 per ton

***Samples, Specific Data and Additional Information can be secured by writing***

# INDUSTRIAL CHEMICAL SALES

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# Production Section

A section of SOAP devoted to the technology of oils, fats, and soaps published prior to Jan. 1, 1932, as a separate magazine under the title, *Oil & Fat Industries.*

# How Much Free Alkali in Soap?

THE amount of free alkali permissible in soap depends to a large extent on the purpose for which the soap is to be used. Views have changed much during recent years as to the desirability of completely excluding caustic alkali from both toilet and laundry soaps. Formerly great pains were taken to remove it, and only a few years ago in the case of toilet soaps, some soapmakers gave the fitted soap one or more brine washes to wash out caustic alkali, regardless of the detrimental effect of too much salt in the soap. It is now fairly generally realized, however, that the presence of a trace of caustic alkali,—up to 0.1 per cent in a freshly boiled soap, is not only quite permissible, but actually desirable in order to avoid later development of rancidity and discoloration.

Most of the caustic alkali quickly becomes carbonated by absorption of carbon dioxide from the air, e. g., a soap containing 0.1 per cent of caustic alkali loses more than half of this during the drying operation alone. It is not surprising therefore, that it is rare to find any free alkali as caustic in toilet soaps on the market.

Another argument against too much insistence on the absence of caustic alkali in a soap, is that the alkali liberated by hydrolysis of the soap when dissolved in water in a concentration up to 0.25 per cent, is much greater than the maximum limit of caustic alkali usually regarded as satisfactory. It should be borne in mind, however, that the concentration of soap as used for hand washing is relatively high, so that not only is the concentration of any free caustic present increased, but the alkalinity due to hydrolysis is smaller and relatively of much less importance. H. E. Monk in his report for 1934 as Public Analyst for Salford, England, deduces from his experiments that the concentration of commercial soap in the lather during hand washing is about 1 in 6 of anhydrous soap.

It is also true in the case of household and laundry soaps that one seldom finds any appreciable amount of caustic alkali present. It would seem that with these the soapmaker might with advantage deliberately fit the soap more coarsely, and so leave a small proportion of caustic in the soap.

## Relation of pH to Detergency

It is now fairly generally agreed that the best pH value for laundry work is between 10.5 and 12, preferably between 11 and 11.5. As the pH of the solution of a neutral soap is only about 10, the addition of some alkaline substance or soap "builder," to increase the pH to between 11 and 11.5, has become customary. Among the soap builders hitherto employed have been sodium carbonate, silicate or phosphate, but in the United States and also in Canada, caustic soda seems to be now finding more favor for the purpose. As a 0.01 *N* or 0.04 per cent solution of caustic soda has a pH of 12, whereas that of a 0.2 per cent solution of sodium metasilicate is 11.93, of trisodium phosphate 11.6, and of sodium carbonate 11.23, it will be seen that much less caustic soda is required to bring the pH of a soap solution to the required alkalinity than of any of these other soap builders.

A very interesting and thorough investigation into the question of the addition of caustic soda to a laundry soap solution was published in 1933 in the *Canadian Journal of Research* by O. M. Morgan, who carried out a series of experiments comparing the use of caustic soda with that of other soap builders, both in the laboratory and on the practical scale in the laundry. He concluded that for actual washing efficiency, irrespective of concentration, sodium metasilicate gave the best results, followed by caustic soda, trisodium phosphate, and sodium carbonate in the order named,—but that when both concentration and washing efficiency were considered, the order became caustic soda, sodium carbonate, sodium metasilicate, and trisodium phosphate.

The best concentration of caustic soda was found to be 0.008 per cent, compared with sodium carbon-

ate 0.026 per cent, sodium metasilicate 0.052 per cent, and trisodium phosphate 0.06 per cent. The effects of the various builders on the tensile strength of the washed goods were measured, and after twenty washes in the laundry, the percentage losses of tensile strength were as follows:

| | |
|---|---|
| Caustic soda | 11.4 |
| Sodium carbonate | 10.7 |
| Sodium metasilicate | 12.2 |
| Trisodium phosphate | 8.0 |

There is some doubt as to the figure for sodium metasilicate, other laundries having found a loss of only about 10.5 per cent under similar conditions. It is seen therefore, that the addition of caustic soda was very little more harmful than that of metasilicate or carbonate, so that there can be little object in insisting that a laundry soap should be practically neutral.

So far as ordinary laundry soaps are concerned, soap powders containing large amounts of alkaline salts are so commonly used now that the presence of a trace of caustic alkali can hardly be very objectionable. Moreover, mixtures containing up to 2-3 per cent of caustic soda are now being recommended for dish washing, and washing up generally. For example Schwartz and Gilman in *Ind. Eng. Chem.*, 1934, recommended a mixture of 45 parts of trisodium phosphate, 53 parts of sodium hexametaphosphate, and 2 parts of caustic soda, as most efficient for washing dishes.

For toilet soap it is generally considered that a first-class article should not contain more than 0.15-0.2 per cent of sodium carbonate as $Na_2O$, and it is usually rather less than the lower limit. Considering the high quality of the caustic alkali now used for soap-making, there will probably be very little carbonate in the lye used for saponification, but there is almost certain to be some formation of carbonate during the fitting and cleansing operations. If 0.1 per cent of caustic alkali as $Na_2O$, is to be left in the soap, as recommended above, most of this will ultimately appear as carbonate, so that 0.2 per cent may then be rather a difficult limit to satisfy.

In view of the widespread use of bath salts, and the sodium carbonate sometimes added to bath water, it certainly seems unnecessary to attempt to reach such a low limit of carbonate with bath soaps.

With regard to laundry and household soaps, the addition of sodium carbonate to these is such a well-known practice that it is obvious that the presence of small amounts of sodium carbonate, up to say 0.5 per cent, cannot be of any importance.

It will be seen that the tendency is for the standards for amounts of free alkali, both as caustic and as carbonate, to become less stringent, but so far soap makers do not appear to be availing themselves of this extra latitude, the free alkali found usually conforming to the standards of many years ago. W. H. Simmons. *Manufacturing Perfumer* **3**, 105-7 (1938).

## Fatty Acid Molecular Weights

A consideration of the relation of the molecular weight of the fatty acids in soap to the various factors which affect detergent power, leads to a recommendation for maximum detergency of a soap containing 15-15.5 per cent of coconut oil, made by the grained process. Molecular weight also has a marked effect on pH, as shown in the following table:

| | *pH at a concentration of* | |
|---|---|---|
| *Sodium Salts of* | *0.5 gram per liter and 15°C.* | *1.0 gram per liter and 15°C.* |
| Lauric acid | 9.0 | 9.6 |
| Myristic acid | 9.0 | 9.5 |
| Palmitic acid | 10.2 | 10.4 |
| Stearic acid | 10.4 | .. |
| Oleic acid | 9.8 | 9.8 |
| Ricinoleic acid | 9.2 | 10.0 |

P. N. Das Gupta, *Indian Soap J.* **4**, 197-9 (1938).

## Soap Particles

Substances such as soap, soda, ammonium nitrate, etc. are fused and, before being pulverized, pass into a cooler in which a body is turning at high speed to insure that the dimensions of the solid particles thus produced do not exceed those of the particles produced by the pulverization. Etablissements Niro Atomizer A/S. French Patent No. 820,601.

## Rancidity Prevention

Inhibitors of rancidity in fats may be divided tentatively into three groups: (1) The acid type, (2) hydroquinone, and inhibitols, the substances occurring naturally in vegetable oils which prevent rancidity, and (3) the phenolic type, including *alpha*-naphthol, pyrogallol, catechol and others. Vegetable oils and crude esters of vegetable oils are protected by types 1 and 3, but not by 2. Distilled fatty acids and esters are protected by types 2 and 3, but not by 1. In general, any type 1 inhibitor used in conjunction with any type 2 or type 3 compound, prolongs the induction period of animal fats to a much greater extent than would be expected from a summation of the effects of each used alone.

Of the naphthols, the *alpha*-compound is a powerful antioxidant, the *beta*, weak. A number of complex phenolic substances have been patented for use as antioxidants in fats and soaps, such as *para*-hydroxydiphenyl, and *para*-hydroxy-diphenylmethane. A number of substituted amines are very active, particularly secondary compounds such as phenyl-*alpha*-naphthylamine and diphenyl-*para*-phenylene-diamine, and amine-aldehyde condensation products such as aldol-*alpha*-naphthylamine. *Chem Age* **38**, 263-5 (1938).

## Soap Kettle Practice

A strong brine change helps to produce the desired texture and finish in a good toilet soap. Producing a standard spent lye (sp. gr. 1.09-1.12) whether the glycerine is recovered or not, is essential to good workmanship and to maintaining the uniformity of the product. A successful brine change should leave the pan in a perfectly closed and thick condition. After boiling for some time with open steam the mass thins down and the next change can be proceeded with. If after running out a suitable amount of lye, the kettle boils in a thick but open condition, this shows that too much salt or caustic was used to open the soap in the brine change. In such cases the charge is closed with water and the

next change should be started. If for any reason the brine change has failed, the operation should be repeated before proceeding further.

When the soap boils smoothly in a thin state, coconut oil is pumped in. It is always advisable to keep the soap on the strong side when saponifying coconut oil. Before graining with strong caustic, complete saponification must be assured. The charge is boiled in a strong condition for about 2 hours. As the saponification approaches completion, the appearance becomes bright and more or less translucent. Strong caustic lye is slowly added with steady boiling and the same precautions as in the brine change. As the soap passes from the closed to the open condition, it requires more and more steam to boil thoroughly. The contents of the kettle have a tendency to rise, so that the steam is shut off for half an hour to let the level drop and the lye settle. When the steam is gently turned on again, the settled lye rises in slow streams which break up on the surface. This process of washing the soap gives an efficiency otherwise impossible to attain. After maintaining the condition for 2-3 hours, the steam is shut off and the kettle allowed to settle overnight. J. S. Shukla. *Indian Soap J.* **4,** 219-20 (1938).

◆

### Soap Perfumes and Sprays

The following are suitable for use either in deodorant and perfume sprays, or for use as soap perfumes:

| *Pine needle* | *Parts* |
|---|---|
| Pine needle oil | 50 |
| Palmarosa oil | 10 |
| Lavender oil | 5 |
| Cassia oil | 5 |
| Citronella oil | 5 |
| Patchouli oil | 1 |
| *Lavender* | *Parts* |
| Lavender oil | 30 |
| Bergamot oil | 8 |
| Cananga oil | 1 |
| Sandalwood | 1 |
| Ylang-ylang | 1 |
| *Lemon* | *Parts* |
| Lemon oil | 15 |
| Bergamot oil | 12 |
| Lavender oil | 5 |
| Petitgrain oil | 1 |
| Clove oil | 2 |
| *Woody* | *Parts* |
| Pine needle oil or bornyl acetate | 20 |
| Linaloe oil | 12 |
| Aubepine oil | 7 |
| Lavender oil | 6 |
| Spike oil | 5 |

*Seifensieder-Ztg.* **65,** 201 (1938).

# Detergent Solutions

THE properties of detergent solutions have been studied from a number of angles. One of a series of recent articles relates to the influence of hydrogen-ion concentration on the interfacial tension of soap solutions. Pure sodium and potassium soaps of oleic, myristic and lauric acids were prepared. Interfacial tensions were determined against xylene, and pH measurements made with a glass electrode. The interfacial tensions decreased rapidly at first, and then at a much slower rate, as the soap concentration increased. The presence of unsaturation in the alkyl chain decreased the surface activity of the soap, thus being equivalent to a reduction in chain length. There was little difference between the interfacial activity of the potassium and sodium soaps of any given fatty acid. The alkali salts that raise the pH of the soap solutions lower the interfacial tension, while those that lower the pH raise the tension. This is attributed to suppression of hydrolysis of the soap.

The hydroxyl-ion concentration required to suppress the hydrolysis falls offs rapidly in the order, oleate, myristate, laurate. This is closely linked with the relative degree of hydrolysis of the soaps, and it follows that the sensitivity of interfacial tension to alkali addition varies with the natural pH of the soap. The changes in interfacial tension depend on both pH and neutral salt concentration, but the salt effect is predominant only under conditions of suppressed hydrolysis. The nature of the soap responsible for the activity at an oil-solution interface and at an air-solution interface is different.

Another paper in the series deals with the hydrolysis of soaps as determined from glass-electrode pH measurements. The degree of hydrolysis of solutions of sodium soaps of lauric, myristic, palmitic, stearic, oleic, linoleic and ricinoleic acids was measured with a glass electrode. The degree of hydrolysis of all of the soaps showed a rapid initial fall, with increasing concentration, followed by a rise to a maximum, and a subsequent fall. The hydrolysis is normal in very dilute solutions, the final products being sodium hydroxide and fatty acid, and the latter constituent is present in less than its saturation concentration. The hydrolysis minimum occurs when the concentration of the fatty acid reaches its solubility limit, and the hydrolysis maximum indicates an amount of fatty acid in excess of its saturation concentration. The unsaturated soaps have lower maxima than the saturated soaps at equivalent concentrations. This abnormal hydrolysis is discussed in connection with the mechanism of acid soap formation.

A sixth paper discusses surface activity and critical concentrations of aqueous solutions of saturated soaps under conditions of suppressed hydrolysis. Surface and interfacial tensions were measured on aqueous solutions of sodium laurate, myristate and stearate at 70° C. Under conditions of suppressed hydrolysis brought about by the addition of alkali or alkaline salts to raise the pH, these saturated soaps behave in a manner that is characteristic of unhydrolyzed long chain colloidal electrolytes, such as the sodium alkyl sulfates. In contrast with the curves normally obtained for soap in the absence of alkali, the present curves exhibit well-defined critical concentrations which decrease in a regular manner with increased chain length of the saturated soap molecule. The critical concentration was lowered considerably by the addition of neutral salts such as sodium chloride. J. Powney and Coworkers. *Trans. Faraday Soc.* **34,** 356-63, 363-71, 372-7 (1938); through *Chem. Abs.*

# Products and Processes

### Continuous Soap Manufacture

In a continuous process for soap manufacture, fats suitable for soap making are caused to flow countercurrent to water in a suitable vertical chamber at a temperature between 365 and 600° F. under sufficient pressure to maintain the water in a liquid condition. The period of contact of fat with water is sufficient to cause a substantial splitting of glycerine from the fatty acids. The fatty acids and glycerine-water resulting from the treatment are removed continuously in separate streams. The fatty acids are next mixed in an enclosed space under pressure without a substantial reduction in temperature, with an alkaline reagent to form soap, the latter being delivered continuously in the form of spray into air relatively cooler than the soap. *Procter & Gamble Co.* of Canada, Ltd. Canadian Patent No. 373,547.

### Mixed Detergents

Mixed detergents consist of a powdered mixture of an alkali and papain. Soiled fabrics of silk, cotton or linen are treated with an aqueous solution in which is dissolved a mixture of papain or bromelin, soap, soda ash and fused sodium sulfide or sodium polysulfide. Other ingredients may be added such as enzymes, camphor, dextrin, perfume, etc. The cleansing is carried out at 40-80° C., after which the clothes are boiled in water which may contain soap; they are then rinsed and dried. Pancreol Ltd. and Clarence E. Pickard. British Patent No. 475,880.

### Mineral Oil Detergents

Detergents comprising salts of acid esters derived from oxygen containing mineral acids and alcohols or olefins having 8-25 carbon atoms in the molecule, are purified by adding to the aqueous solution a water-soluble volatile organic liquid capable of forming a constant boiling mixture with water. A substantial part of the organic liquid is removed, part of the water also being removed at the same time, and the inorganic salts present are precipitated. The latter are removed and the alkyl ester salt recovered. In an example, the products from a limited oxidation of paraffin wax with air are saponified to separate the fatty acids. The unsaponified fraction, after extraction, is hydrogenated to convert the aldehydes and ketones. The resulting secondary and tertiary alcohols are sulfonated with chlorosulfonic acid in ether, neutralized and extracted with petroleum naphtha to remove unsulfated material. The aqueous product is converted into a paste by evaporation, propyl alcohol is added and evaporation continued until the inorganic salts are precipitated. Standard Oil Development Co. British Patent No. 475,075.

### Soap Purification

Soaps are freed from unsaponifiable constituents by treating a mixture of fatty acids and unsaponifiable materials such as waxes, oxidation products of hydrocarbons, paraffin, middle oil, hydrogenated oils, etc. with alkali and then treating the saponified product with an organic solvent after some of the unsaponifiable constituents have been removed by distillation. I. G. Farbenindustrie A.-G. British Patent No. 474,476.

### Liquid Dispenser Soap

Liquid soap for use in dispensers is suggested to be made from 12 parts of coconut oil fatty acids, 3 parts of peanut oil, sesame oil, castor oil, or soybean oil fatty acids, 8 parts of caustic potash and 76.5 parts of soft or distilled water containing 0.5 part of potassium chloride. If made from fatty acids, preparation is by the semi-boiled process. Neutral fats can also be used by a suitable modification of the method of processing. It is important that saponification be complete. An excess of 0.1 per cent of free alkali will do no harm and will promote clarification. The soap should be cooled for as long a time (10-14 days), and at as low a temperature as possible, and filtered at a low temperature. *Seifensieder-Ztg.* **65,** 202 (1938).

### Soap Substitutes

These consist of water-soluble salts of salicylic or cresotic acids, substituted by higher alkyl radicals, particularly secondary alkyl radicals, or their derivatives etherified or esterified on the hydroxy group. Examples are the sodium salt of secondary octyl-, dodecyl-, or tetradecylsalicylic acid. Henkel & Cie. G.m.b.H. French Patent No. 820,496.

### Naphthenic Acid Sulfonation

The reaction between fuming sulfuric acid and naphthenic acids of varying molecular weight was investigated and led to the following conclusions:

1. The higher the molecular weight, the easier it is to produce sulfonation.

2. At the same molecular weight those naphthenic acids enter more easily into reaction which have a higher density and a higher refractive index.

3. Sulfonation of naphthenic acids is not accompanied with a splitting of carboxyl groups.

4. During the sulfonation reaction only a minimal evolution of carbon dioxide takes place. This is apparently due to a side reaction resulting from oxidation.

An extensive bibliography is appended. W. Kisielewicz, S. Pilat and J. Sereda. *Ole, Fette, Wachse, Seife. Kosmetik* **1938,** No. 3-4, 15-18.

### Fat Hardening

Fats and oils are hardened at 220-70° C. in the presence of a catalyst obtained by treating with sulfuric acid and hypochlorites the residue from a previous hydrogenation. E. Ya. Etinburg and G. A. Gol'dshtein. Russian Patent No. 35,939.

## Shampoo Composition

A number of fatty acids were combined with caustic soda, caustic potash and triethanolamine respectively, and the properties of each soap studied. The conclusion reached was that the best shampoo is one that gives a heavy lather quickly, is sufficiently soluble to give a clear solution, and has a minimum pH value. Sodium and potassium soaps give a high pH (about 9-10), while triethanolamine soaps give a pH in the neighborhood of 7. Recommended formulas are as follows:

| | |
|---|---|
| Coconut fatty acids | 11.1 |
| Myristic acid | 3.9 |
| Triethanolamine | 10.0 |
| Water | 75.0 |
| Coconut fatty acids | 12.1 |
| Olive oil fatty acids | 3.4 |
| Triethanolamine | 9.7 |
| Water | 74.8 |

These shampoos should meet the requirements suggested above. Joseph Kalish. *Drug & Cosmetic Ind.* **42,** 320-1 (1938).

## Sulfonated Oil Shampoo

A composition for hair treatment consists of a clear aqueous solution of lecithin and a sulfonated oil, and an additional dispersing medium consisting of sulfonated high-molecular weight alcohols or their esters, acidyl derivatives of taurine as their alkali salts, or condensation products prepared by causing albumin decomposition products to react in alkaline solution with sebacic acid chlorides. Preservative agents such as salicylic acid, boric acid, benzoic acid etc., may be added. George Fritz Ströher. British Patent No. 473,638.

## Detergent Efficiency

Detergent efficiency depends on the following three properties:

1. Wetting power. By lowering the interfacial tension between fatty soil or other types of soil, and water, the detergent solution is able to bring about thorough wetting of the soiled fabric or substance.

2. Foaming and emulsifying power make possible the emulsification of the soil so that the fat and inert dirt present are separated into finely divided particles.

3. Adsorption. This is the property by which the detergent in the wash liquid is concentrated on the surface of the soiled material and there adsorbs the emulsified soil so that the latter can be removed with the detergent on rinsing. Beythien. *Deutsche Parfümerie-Ztg.* **24,** 109 (1938).

## Synthetic Fatty Acids

In 1936 an announcement was made of the opening of a plant in Germany for the production of fatty acids from paraffin. The yearly yield in fatty acids from this source amounts at the present time to 20,000 tons. The raw materials are paraffin-like substances from benzine synthesis. Two new plants with a capacity of 20,000 tons yearly are to be opened shortly. The fatty acids obtained are particularly suitable for making soap. *Allgemeine Oel-und Fett-Ztg.* **35,** 102 (1938).

## New Nickel Catalyst

As a catalyst for the hydrogenation of oils and fats, use is made of nickel produced by the action of caustic soda solution on an alloy containing nickel and aluminum in approximately equal proportions. The hydrogenation may then be effected at about atmospheric pressure and at a relatively low temperature, sufficient merely to melt the fat. Soc. de recherches et de perfectionnements industriels (S. A. P. I.). French Patent No. 821,015.

## Saponifying Agent in Blocks

One or more alkali carbonates and one or more alkaline earth oxides or hydroxides are pressed into forms of a given weight which can be added directly to the soap kettle. They can be protected against atmospheric effects by coating with hydrocarbons, bitumens, salts of fatty acids, waxes, highly sulfurated fatty acids, etc. The finely dispersed carbonates of alkaline earth metals, chiefly calcium carbonate, remain within the soap, and by their mechanical properties increase the detergent activity. György Kereszty. Hungarian Patent No. 117,459.

## Rosin Soap

Soap is prepared by treating rosin waste with a dilute solution of sodium hydroxide. The liquid product, containing incompletely saponified rosin and impurities, is concentrated to a grease-like consistency. This mass is cooled and washed at 8°C. with slow agitation for a complete separation of the admixtures. N. V. Marinkin. Russian Patent No. 44,291.

## New Detergent Agents

Fatty acids having at least six carbon atoms and containing a strongly hydrophilic group and at least one double linkage that has been subjected to elaidinization, are used as detergents. The strongly hydrophilic group is one that renders the fatty acid soluble in water; it preferably contains sulfur or phosphorus and may be introduced by treating the fatty acid with a compound containing a water-solubilizing group such as taurine, or by sulfonation. N. V. Chemische Fabriek "Servo" and Meindert D. Rozenbroek. British Patent No. 473,760.

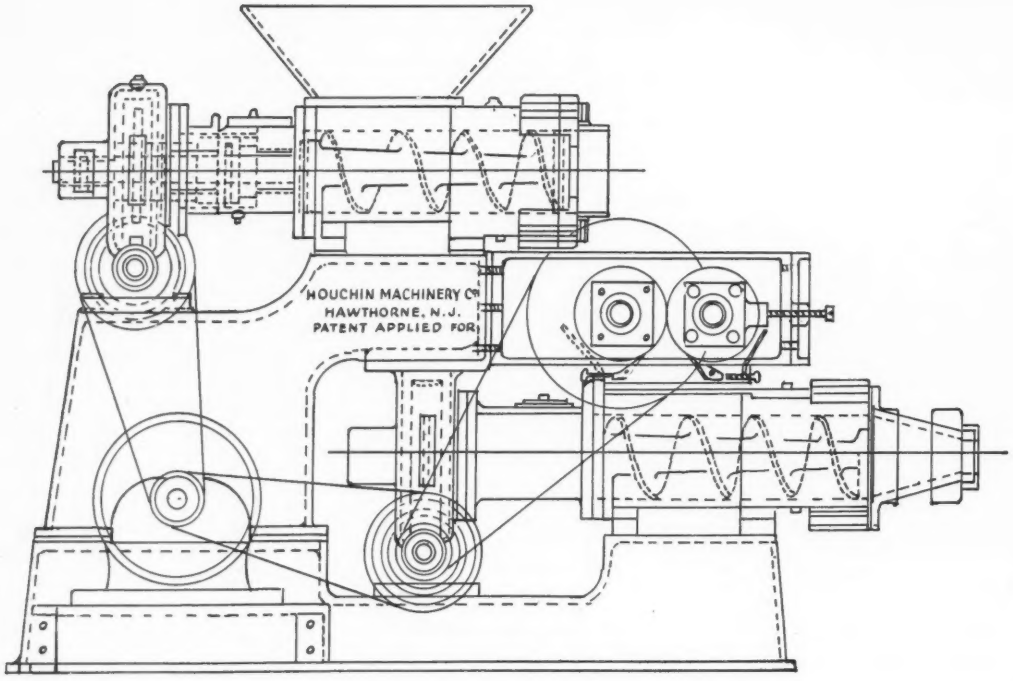
## Soap-bleach Mixture

Soap powder containing bleaching agent may be made from 16-20 parts of tallow fatty acids, 16-12 parts of coconut oil or palm-kernel oil fatty acids or a mixture of the two, 6 parts of sodium silicate 38° Be., 16 parts of caustic soda 38° Be., 20 of water, and 28 of calcined soda ash. The finished product is ground and 9 parts of dry powder mixed with one part of stabilized sodium perborate. *Seifensieder-Ztg.* **65,** 222 (1938).

## Detergent Preparation

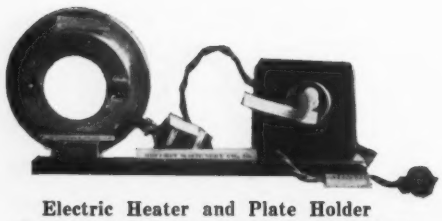
A detergent for use in laundering is prepared from water-soluble salts of alkyl sulfuric acids from high molecular-weight secondary alcohols. It is freed from unsulfonated material and other organic impurities by extraction with petroleum ether. Walter H. McAllister (to Procter & Gamble Co.) U. S. Patent No. 2,108,756.

# HOUCHIN MACHINERY CO., INC. HAWTHORNE, N. J.

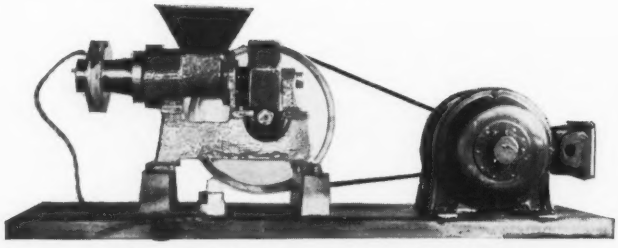



## COMBINATION PLODDERS
### With Double Head and Milling Attachment With Motor

Soap passing through the first time produces ribbons of soap. Second passing produces a fine finished, well compressed bar of Soap. For the second passing, remove Short Head on Second Plodder, bring Long Finishing Head in place. This Head is fitted with our Electric Heater and Plate Holder. A small stream of water passing through Plodder Cylinders and Rolls of Mill keeps the Soap cool, preventing the Soap from blistering. There is no dropping of Soap. The machine is very easily cleaned. It is excellent for short runs of Soap and saves Horse-Power.



**Electric Heater and Plate Holder**
**By using this unit instead of steam, gas or lamp a uniform heat can be maintained. No more blistered soap. Made to fit all Plodders.**



**Laboratory Plodder, complete with Motor, Electric Heater, and Plate Holder.**

# New Patents

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PATENT AND TRADE-MARK CAUSES

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**Complete copies of any patents or trade-mark registration reported below may be obtained by sending 25c for each copy desired to Lancaster, Allwine and Rommel. Any inquiries relating to Patent or Trade-Mark Law will also be freely answered by these attorneys.**

**No. 2,113,452,** Cleaning Device, Patented April 5, 1938, by Angus S. Long, Cedar Rapids, Iowa. A cleaning device comprising a moisture holding pad having an opening in one face thereof, and a scraping element secured in the opening in the pad, the scraping element being comprised of hair strands wound into a tightly coiled roll with the roll disposed in the opening with a face thereof exposed at the surface of the pad and with its axis parallel to the face of the moisture holding pad in which the opening is located, this face and the exposed portion of the roll constituting a work contacting surface.

**No. 2,113,565,** Organic Mercury Compounds, Patented April 12, 1938, by Carl N. Andersen, Wellesley Hills, Mass., assignor to Lever Brothers Company. A new organic mercury compound of the general formula $RHgR_1$, in which R represents an aromatic structure and in which none of the carbon atoms has direct linkage with any element other than hydrogen, carbon and mercury; and in which $R_1$ represents an acid radical of an aliphatic mono-basic carboxylic acid containing a carbonyl group other than in a carboxyl group, which the radical is linked to an RHg group through replacement of the carboxyl hydrogen atom.

**No. 2,113,819,** Fatty Acid Condensation Products, Patented April 12, 1938, by Nathaniel Beverley Tucker, Glendale, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio. In the reaction of a higher molecular fatty acid halide with a substantially dry hydrolysis product of a protein to form a wetting, emulsifying, sudsing and detergent agent, the step which comprises carrying out the reaction in the absence of substantial amounts of water and the presence of an acid-neutralizing agent and a solvent which is chemically inert to the fatty acid halide.

**No. 2,114,125,** Insecticidal Emulsion, Patented April 12, 1938, by Arthur Gustav Kaufmann, Associated, Calif., assignor, by mesne assignments, to Tide Water Associated Oil Company. A stable insecticidal emulsion comprising a soap of a high molecular weight fatty acid and an alkylolamine roughly 3% by weight, polyhydric alcohol roughly 1.2% by weight, water roughly 14% by weight, lead arsenate roughly 12% by weight and sufficient hydrocarbon oil to make up 100%, the emulsion remaining sufficiently stable for spraying upon dilution with further water up to about three hundred times the volume of the emulsion.

**No. 2,114,307,** Spreader for Sprays, Patented April 19, 1938, by John F. Littooy, San Francisco, Calif. A spreader for aqueous toxic sprays comprising a mixture of casein, powdered skimmed milk and barium sulfate.

**No. 2,115,046,** Insecticide, Patented April 26, 1938, by Lloyd E. Smith, Washington, D. C.; dedicated to the free use of the People of the United States of America. An insecticide containing as its essential active ingredient a nitrated tolyl ether.

**No. 2,115,380,** Insecticidal Oil Spray, Patented April 26, 1938, by Elmer W. Adams, Hammond, Ind., assignor to Standard Oil Company (Indiana), Chicago, Ill. The method of controlling the leaf penetration quality of an insecticidal spray oil which comprises dissolving in the oil about .1% to 5% of an oil-soluble aluminum soap of a sulfonated oil.

**No. 2,115,668,** Refining Fatty Oils and Fats, Patented April 26, 1938, by Edward M. James, Moylan, Pa., assignor to The Sharples Specialty Company, Philadelphia, Pa. A process of refining soya bean oil that consists in mixing with the soya bean oil a saturated aqueous solution of trisodium phosphate in an amount approximately 50% in excess of that necessary to neutralize the free fatty acids contained in the oil, heating the mixture to 60 to 70° F. while agitating, gradually increasing the temperature to 110 to 140° F., and thereafter centrifuging the mixture to separate the aqueous phase from the treated oil.

## Sulfamic Acid

Commercial production of sulfamic acid, a new inorganic acid having the form of a crystalline solid, was announced by M. E. Cupery of E. I. duPont de Nemours & Co. at the April meeting of the American Chemical Society in Dallas, Texas. The acid can be shipped and handled with all the convenience of a solid, yet when dissolved in water it has the characteristic of a strong, highly ionized acid, approaching hydrochloric or sulfuric acid. The process of manufacture was described independently at the same time in Germany and the United States, and is covered by patents here and abroad. The acid is prepared from urea and fuming sulfuric acid. Salts formed by sulfamic acid with such metals as lead, barium and calcium are water-soluble. Derivatives of the acid are of probable importance in the dye, textile, laundry, tanning and other industries. *Am. Dyestuff Reporter* **27,** 255 (1938).

## Wants American Shampoos

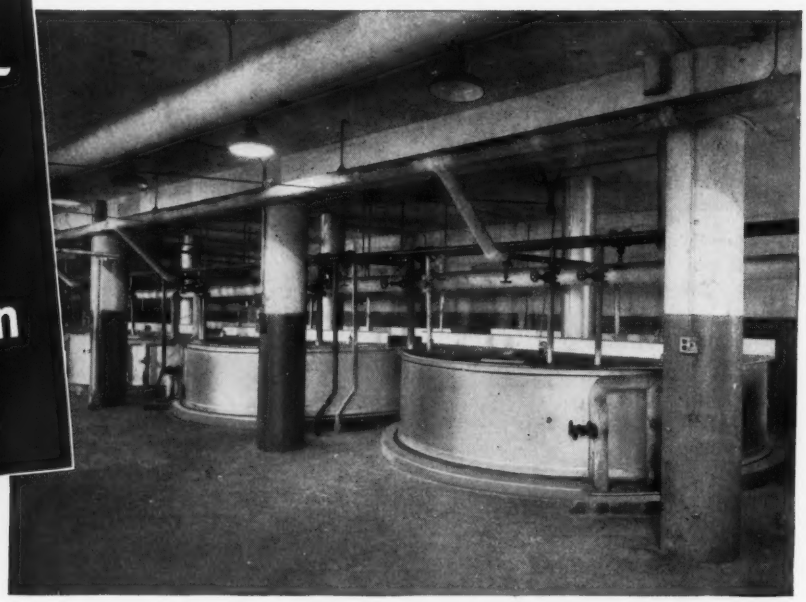
A concern in London, Eng., is interested in communicating with American manufacturers of hair shampoos relative to a purchase arrangement. Inquiries may be forwarded to the U. S. Bureau of Foreign & Domestic Commerce, Washington, mentioning inquiry No. 6101.

**Exactly, what is pH?**

The determination of pH and its practical applications in the soap and detergent industry...a series of three articles on the hows, whys, and wherefores of pH by Dr. C. A. Tyler,—a practical discussion, will begin in the July issue of SOAP.

# LOWER COST
## STAINLESS-CLAD EQUIPMENT

**Assures**
- Purity
- No Discoloration
- Economy



*Battery of 14 foot diameter soap kettles installed at Canadian Packers, Ltd., plant, Toronto, Ontario. Thirteen tons of 3/16 inch IngAclad plate used for top section and covers of these kettles. Fabrication by Toronto Iron Works, Ltd., Toronto, Ontario.*

**American manufacturers of soaps, cosmetics and allied products are benefiting two ways from the use of IngAclad Stainless-Clad Steel. 1st . . . Product Improvement. 2nd . . . Plant Economies.**

**Some have chosen to use kettles and tanks made entirely from IngAclad plate as shown in the illustration. Others use IngAclad sheets as liners for new or old equipment, and for fume stacks.**

**In both applications, the product is in direct contact with the pure "18 chrome—8 nickel" stainless surface of IngAclad, which cannot impart any trace of iron discoloration nor metallic impurity.**

**Compared with other corrosion-resisting alloys, IngAclad, with its 20% layer of stainless, saves up to 50% in the basic material cost.**

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Bruce Donald, 164 Dufferin Ave., Brantford, Ontario
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The Adler Steel Products Co., 310 Thorpe Bldg., Minneapolis, Minn.

# Publications

IF YOU want additional information on any of the items described below or if you want any of the bulletins, catalogs, etc., write to the MacNair-Dorland Co., Inc., 254 West 31st St., New York, mentioning the number of the item.

### 485—Insecticide Base Folder

Shell Petroleum Corp., St. Louis, has recently published a folder entitled "What's New in the Insecticide Field?" which describes "Shell" odorless insecticide base. Copies available on request.

### 486—Fuld School Folder

Fuld Bros., Baltimore, are distributing a folder calling attention to their line of sanitary chemicals and floor products for use in the school room. Copies available on request.

### 487—Cyclone Conveyor Catalog

Cyclone Fence Co., Waukegan, Ill., has just published a new 1938 metal conveyor belt catalog and folder. The literature describes in detail the company's line of metal conveyors, together with instructions on how to determine what particular conveyor is needed for a specific use. Copies available on request.

### 488—"Packomatic" Folder

J. L. Ferguson Co., Joliet, Ill., has just published a folder illustrating and describing its "Packomatic" container sealing, boxing and numbering equipment. Copies available on request.

### 492—D & O Price List

Dodge & Olcott Co., New York, has recently published a new wholesale price list of its line of essential oils and aromatic chemicals. Copies available on request.

### 490—M. M. & R. Catalog

Magnus, Mabee & Reynard, Inc., New York, have recently issued a new catalog and price list of their line of essential oils and aromatic chemicals. Copies available on request.

### 491—Brush Catalog

Flour City Brush Co., Minneapolis, has just published a 25th anniversary catalog of its complete line of brushes and miscellaneous supplies for the janitor trade. Copies available on request.

### 489—Hudson Sprayer Catalog

H. D. Hudson Mfg. Co., Chicago, has just issued a new and complete catalog of its line of sprayers and syraying equipment. The catalog contains illustrations of each sprayer, with details on construction and operation. Copies available on request.

### 493—DuPont Termite Booklet

E. I. du Pont de Nemours & Co., Wilmington, Del., have published a booklet entitled "Termites and Rot; What the Expert Knows About the Building Bogies." It discusses the damage resulting from termites, and the place of the new du Pont development, chromated zinc chloride, in combating both termites and dry rot. Copies available on request.

### 494—Describe Rotenone Conc.

Dispersion Products Co., Hammond, Ind., has recently published a new folder giving the salient features of the concern's rotenone concentrates for household and cattle sprays. Copies may be obtained by writing direct to the company or to the publishers of SOAP.

### 495—Amer. Standard Catalog

American Standard Mfg. Co., Chicago has recently published a new catalog covering its line of wet mops, dust mops and wax applicators. The new book should be of interest to all sanitary supply distributors. The catalog is so arranged that individual sheets may be removed and put into the jobber's own catalog. Copies may be obtained by writing the company or the publishers of SOAP.

### Wants American Naphthalene

A concern in Istanbul, Turkey, is interested in communicating with American manufacturers of naphthalene crystals and balls relative to a purchase arrangement. Inquiries may be forwarded through the U. S. Bureau of Foreign & Domestic Commerce, Washington, mentioning inquiry No. 6393.

### Oil of Rose Geranium

(*From Page* 33)

even purchase oil from other smaller distillers and thereby have become dealers of oil.

We should not omit the Chinese middlemen who also play a role in the geranium oil trade. As trading store owners, they might purchase or barter across the counter small lots distilled by "colons" who did not sell all their oil to their landowner. Or they may purchase small lots from independent distillers. They may even act as field and town brokers. In whatever capacity, the Chinamen are not a very desirable factor in this trade.

We have explained at length how the bulk of oil is delivered every week-end by the "colons" to the landowners who usually are anxious to realize cash by selling through brokers to exporters. Sometimes, however, stocking of oil seems to be a profitable speculation and wealthy large producers as well as small brokers or middlemen accumulate stocks.

These invisible lots are a constant menace to the normal price structure of geranium oil. No one can estimate their importance and they may flood the market at any moment upsetting thereby all predictions. Besides, some of these lots have been stored with little knowledge and care, perhaps in half-filled, poorly sealed containers, with access of air or exposed to light and heat. Of course, quality under these conditions suffers and the oil more or less resinifies with darkening color. When such lots finally do reach the market they are sold at a discount of 25 to 30 francs below the price of normal oils. Brokers or exporters

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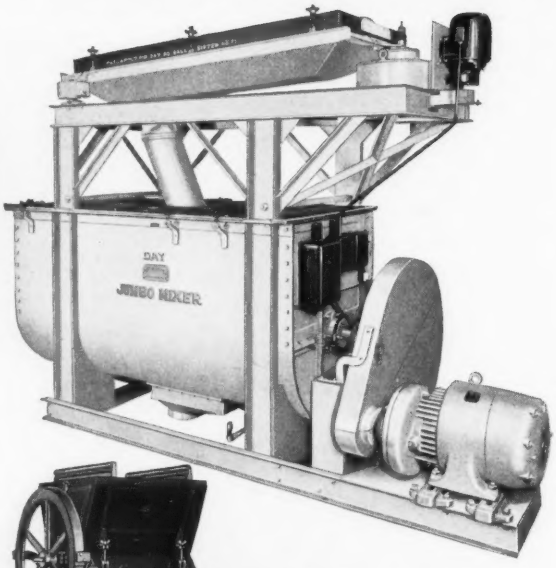
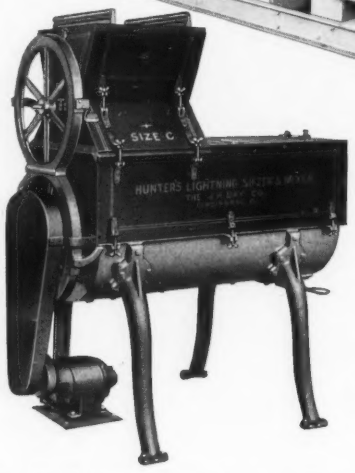
# DAY SIFTING and MIXING EQUIPMENT




***Above:***

*Day Ro-Ball Gyrating Sifter mounted on a Day Jumbo Mixer.*

***Left:***

*Day "C" Hunter Sifter & Mixer approximate capacity 400 to 600 pounds.*

The Ro-Ball—Jumbo unit is compact in design, sturdy in construction, free from vibration and uses a minimum of power. It provides a continuous sifting and mixing operation, producing approximately 1500 pounds of dry material, every 8 minutes.

The Hunter Sifter & Mixer is ideal for dry powders, mixing of cup greases, oils, cements, coatings, and various other materials requiring a thorough as well as a quick mix.

The J. H. Day Company has been manufacturing sifting and mixing equipment of all types for over a half century. No matter what your sifting or mixing problem may be, whether the incorporation and blending of dry powders, light pastes, or heavy plastics, there is a Day machine for your purpose.

***Write for full information on these units***

***The J. H. DAY Company***

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**CINCINNATI** **OHIO**

of elastic conscience sometimes bulk them into larger lots of good oils and make a handsome profit.

*Price Fluctuations of Reunion Geranium Oil*: Prices are influenced mainly by three factors:

1. By actual supply of oil which is dependent on acreage planted, prevailing weather conditions and yield of oil. Of course, cyclones play a great role in this respect.

2. By speculative factors such as exchange fluctuations, sudden appearance on the market of "invisible" old lots stored for speculative purposes.

3. By the demand from abroad. This factor is probably the most important and, next to devastating cyclones, may be considered as exercising the greatest influence upon the price movement of geranium oil. Exporters in St. Denis are not entirely wrong if they claim that oil prices are primarily determined abroad.

It is true that a single inquiry from a large soap manufacturer in the United States or Europe, when given out to several competing essential oil houses in New York, London or Grasse, might entirely upset the price structure of St. Denis. Cable lines to St. Denis and telephone wires from St. Denis to the producing centers in the interior buzz with competing inquiries and an original inquiry, for instance, for two tons, quickly assumes the importance of ten tons, thereby merely hurting the best interests of the original inquirer. Geranium oil should be bought quietly, so to speak, through the most reliable sources. It is entirely a matter of confidence, and the customer should exercise judgment and discretion in order not to excite the market artificially. It should always be kept in mind that geranium oil is one of Reunion Island's most important and rather speculative commodities.

There is no period of the year when the geranium oil market can be predicted with any degree of certainty. The oil is continuously moving up and down, sometimes for no apparent reason. The most advantageous period to purchase, in the opinion of some St. Denis exporters, is probably toward the end of January. By that time the bulk of the summer harvest (January and February) has been distilled, most of the producers need cash, stocks are abundant and there is a general tendency to sell. It is still too early for cyclones (they may strike in January but as a rule more toward February and March). If one has covered at that time and if a cyclone should really arrive, good profits can be made. Of course, it is extremely difficult and hazardous to find the most opportune moment between the climax of the harvest and the possible arrival of a cyclone.

As we have explained in detail, the entire structure of the Reunion geranium oil industry tends toward final bulking of the oil before exportation. The exported lots almost without exception consist of innumerable small lots originating from many corners of the producing regions and having been distilled in hundreds of small stills and bulked by a net of producers, field brokers, town brokers and exporters.

Of course, there are certain differences in quality, caused by altitude, weather, location and furthermore by the abundance or lack of water in the stills during distillation. However, the lots of oil reaching St. Denis are mostly bulked lots and, therefore, the constants of the oils analyzed by the official export control laboratory in St. Denis show comparatively little variations.

According to Mr. Rene Bertrand, former chemist in charge of the government's analytical laboratory in St. Denis, oils distilled too early in the season (desire for quick monetary return) are richer in terpenes, therefore less soluble and of lower specific gravity. On the other hand, if distilled too late, the oils show a certain minty note probably caused by a higher content of menthone.

It would be rather difficult when ordering oil of geranium from Reunion to specify definite qualities, —certain "*crus*,"—distilled by some of the larger producers. The bulk of their oil is currently sold weekly to the town brokers. Comparatively little oil remains on their hands unless they stock up for speculation's sake. In the latter case, however, the large producers are not always willing to sell at current market prices. In other words, these lots are released only against the offer of a sufficiently attractive premium.

*Adulteration of Reunion Geranium Oil*: Fortunately, adulteration is rarely practiced on the Island. Synthetics are almost unknown and the distillers would not know what to do with them. Neither would the exporters risk using synthetics. The Island is small, imports are limited and any incoming shipments of geraniol or fractions, etc., would immediately arouse the suspicion of the custom officials. Only one form of adulteration sometimes is practiced by the small "colons" and especially by the Chinese middlemen, i.e. the addition of petroleum. This, however, can be detected quickly by a solubility test. Occasionally alcohol is added because in Reunion it is produced cheaply from rum, but the presence of alcohol, too, can be detected by simple tests. No exporter has a modern analytical laboratory. All incoming lots are examined by nose test and, if there is any doubt, a sample of the lot in question is sent to the official laboratory of St. Denis.

The most dangerous form of adulteration (and it is not really adulteration) consists in adding to newly distilled oils mixtures of old lots partly resinified, of higher specific gravity and dark color. It is difficult to detect by chemical methods small additions of old oils to freshly distilled lots.

Speaking of new and old oils, we should, however, point out the fact that freshly distilled geranium is not as beautiful, round or powerful as old oil. It seems indeed that geranium attains its greatest beauty after a year or two, or even more of storage. To get the fullest value in geranium, it appears worthwhile to store away a lot for several years, on condition, of course, that the storing is done under the usual precautions.

*Chemical and Physical Properties of Reunion Geranium Oil*: As pointed out before, the various lots of geranium oil reaching the market consist of bulked lots originating from many sections of the small Island. It would serve no practical purpose to make an exact survey of oils distilled in the different localities especially because so many factors, like weather and period of distillation, constantly change the picture.

A few genuine oils which the writer procured during his stay on Reunion Island late in the fall of 1937 showed properties as in the table below.

Lots of undoubted purity and representing considerable quantities which we received during the past five years showed the following limits:

I. EXTREME LIMITS

| | |
|---|---|
| Specific Gravity at 15° C: ..... | 0.890 to 0.894 |
| Optical Rotation: .. | —10°40′ to —12°20′ |
| Refractive Index at 20° C: ..... | 1.4632 to 1.4661 |
| Acid Value: ..... | 1.4 to 7.0 |
| Geranyl Tiglinate: | 22.4% to 30.7% |
| Total Geraniol: .. | 64.6% to 72.7% |
| Menthone: ..... | 9.2% to 11.6% |
| Solubility at 20°C: | Soluble in 2 to 2.5 volumes and more of 70% alcohol |

These constants are the actual ones, including every shipment. Most lots, however, fell within more narrow limits which read as follows:

II. AVERAGE LIMITS

| | |
|---|---|
| Specific Gravity at 15°C: ..... | 0.890 to 0.893 |
| Optical Rotation: .. | —10°40′ to —12°10′ |
| Refractive Index at 20° C: ..... | 1.4639 to 1.4660 |
| Acid Value: ..... | 2.8 to 5.6 |
| Geranyl Tiglinate: | 24.4% to 29.7% |
| Total Geraniol: .. | 66.0% to 68.5% |
| Menthone: ..... | 9.2% to 11.2% |
| Solubility at 20°C: | Soluble in 2 to 2.5 volumes and more of 70% alcohol |

| Location | Specific Gravity at 15° C. | Optical Rotation | Refractive Index at 20° C. | Acid Value | Geranyl Tiglinate | Total Geraniol | Menthone | Solubility at 20° C. |
|---|---|---|---|---|---|---|---|---|
| Entre-Deux . | 0.892 | —11°0′ | 1.4640 | 7.0 | 28.9% | 68.6% | 10.1% | Soluble in 2 to 2.5 volumes and more of 70% alcohol. |
| Montvert ... (No. 1) | 0.899 | — 9°28′ | 1.4671 | 7.0 | 26.6% | 66.1% | 10.1% | Soluble in 2.5 volumes and more of 70% alcohol. |
| Montvert .. (No. 2) | 0.893 | —13°40′ | 1.4640 | 7.0 | 28.5% | 64.8% | 13.5% | Soluble in 2 to 2.5 volumes and more of 70% alcohol. |
| Petite Ile .. (No. 1) | 0.895 | —12°0′ | 1.4642 | 8.4 | 28.7% | 67.9% | 13.3% | Soluble in 2 to 2.5 volumes of 70% alcohol; cloudy in 4 volumes and more. |
| Petite Ile .. (No. 2) | 0.896 | —11°20′ | 1.4649 | 8.4 | 29.9% | 68.4% | 11.6% | Soluble in 2 volumes and more of 70% alcohol. |
| St. Louis .. | 0.893 | —11°52′ | 1.4643 | 7.0 | 30.9% | 66.9% | 10.1% | Soluble in 2 to 2.5 volumes and more of 70% alcohol. |
| St. Joseph.. | 0.895 | —11°20′ | 1.4650 | 8.4 | 28.7% | 66.9% | 11.6% | Soluble in 2 to 2.5 volumes and more of 70% alcohol. |
| Tampon ... (No. 1) | 0.894 | —11°48′ | 1.4629 | 7.0 | 31.7% | 66.1% | 12.3% | Soluble in 2 to 2.5 volumes and more of 70% alcohol. |
| Tampon ... (No. 2) | 0.893 | —11°20′ | 1.4631 | 7.0 | 30.9% | 68.3% | 11.2% | Soluble in 2 to 2.5 volumes and more of 70% alcohol. |
| Tampon ... (No. 3) | 0.894 | —11°20′ | 1.4630 | 8.4 | 30.3% | 67.3% | 11.9% | Soluble in 2 to 2.5 volumes and more of 70% alcohol. |
| Tampon ... (No. 4) | 0.894 | —11°12′ | 1.4639 | 5.6 | 31.1% | 68.7% | 10.8% | Soluble in 2 volumes and more of 70% alcohol. |
| St. Leu .... (No. 1) | 0.892 | —11°4′ | 1.4635 | 5.6 | 30.7% | 67.3% | 9.6% | Soluble in 2 volumes and more of 70% alcohol. |
| St. Leu .... (No. 2) | 0.891 | —11°20′ | 1.4635 | 5.6 | 29.5% | 68.1% | 10 % | Soluble in 2 volumes and more of 70% alcohol. |

It is quite interesting to note that the constants of these samples vary between somewhat wider limits than those of actual shipments. This is very likely due to the fact that these samples represent oils distilled in different stills located in different regions and altitudes, with different exposures, while the actual shipments of larger lots are usually bulkings of several, if not many, small lots and, therefore, are more uniform.

*Future Outlook for Reunion Geranium Oil*: Because of rather attractive prices prevailing during the last two years, quite a number of new plantings were lately started, mostly in the higher regions. As far as the 1937 winter (August to October) harvest is concerned, dryness has impeded normal growth of the plants, but the 1938 summer (January and February) crop seems to have been normal. Generally speaking, it appears, however, that geranium oil production in Reunion is not increasing. Rather, it is in retrogression because:

1. Cultivation of geranium is quite soil-exhausting. After several years of geranium, the soil tires and the planting dies. Geranium cannot be replanted in the same ground until the soil regains its vitality and fertility by very careful plant and crop rotation. Many of the hillsides have already been deforested in order to obtain virgin ground for geranium but all these regions are becoming more and more exhausted.

2. Because of this excessive deforestation, fuel is scarce in many sections. It has become necessary to reforest with acacia decurrent and filaos. However, such work is costly and geranium must remain on a price level sufficiently high to pay for reforestation.

3. At present sugar cane yields very attractive prices in Reunion. Therefore, it has replaced geranium on the lower slopes and is continually pushing it back to the higher forest line where working conditions are more difficult.

4. While at the present high price level, it is quite remunerative, geranium nevertheless offers more risks than any other agricultural enterprise. Cyclones, preceding or succeeding hot winds, excessive rainfalls, etc., affect geranium more than they harm sugar cane.

Despite all these factors, geranium at present is still produced in nominal quantities because lately methods of cultivation have been considerably improved. Due to efforts on the part of the agricultural govern-

ment service the Reunion producers today are able to employ more rational methods of cultivating and fertilizing.

Summarizing the general situation regarding oil of geranium, we find that France and Spain today produce only negligible quantities, while production in Algeria is on the decline due to limited space and other factors prevailing in the Mitidja Plain. Morocco, because of its generally dry climate, will probably never be able fully to replace Algeria although its production might be increased somewhat. Russia remains a rather uncertain factor and even if cultivation of geranium in the Crimea and the Caucasus should extend, the oil might be absorbed mostly by Soviet Russia's new perfume industry which is rapidly developing. Cultivation of true geranium in Kenya Colony has been a failure and oil of mawah is only partly a substitute which at present, due to exchange rates, cannot compete with true Bourbon geranium oil. Thus, Reunion Island still holds practically a monopoly in regard to the production of this very important oil.

## Bleaching in Soap Plant

(*From Page* 26)

and the speed of the agitator enters into consideration also. These factors will vary according to the class or type of oil or fat which is to be refined.

Cottonseed oil which is seldom used in the soap kettle is refined according to the above general procedure. The Official Methods of the American Oil Chemists Society relating to cottonseed oil will be interesting to those who are not familiar with this method. Briefly the procedure is to run into the agitator tank the amount of oil that is to be treated. A test is taken to determine the percentage of free fatty acids and from this the calculation is made to find the quantity of caustic soda solution necessary. The strength of the caustic soda solution will vary in degrees Baume at 15° C from 10 to 30 degrees. The weaker solution is used on the low percentage free fatty acid oils and the strength increases as the percentage of free fatty acid increases. It is customary to use slightly stronger caustic soda solutions on expeller oils than hydraulic oils. The temperature of the oil is adjusted to about 20°-24° C and with the agitator running at about 250 R.P.M. the whole amount of the caustic soda solution is added quickly. After a period of time, from 15 to 45 minutes of agitation, the temperature of the oil is raised to about 55°-60° C and the agitation is slowed down to about 70 R.P.M. while the temperature is rising. After the temperature is brought up to the maximum, agitation is stopped, and the mixture is allowed to settle. It will be noticed that when the caustic solution is first added to the oil that it becomes clouded and appears to form an emulsion but as agitation proceeds and the temperature rises the "break" appears. This "break" is really the apparent emulsion breaking up into particles, and when agitation is over, these particles drop to the bottom where along with some of the oil they form the "foots." The "foots" are composed of the soap of the free fatty acids along with water and impurities and coloring matter. The clear oil above the foots is then ready for further treatment. The next operation is bleaching.

The above method is applied to crude coconut oil except that with oils containing less than 5 per cent free fatty acids (calculated as oleic acid), the amount of caustic soda solution will not be more than enough to provide an excess of 0.2 per cent above the amount required to neutralize the free fatty acids. With oils containing over 5 per cent of free fatty acids the amount of caustic soda solution will be 1.25 times the amount required to neutralize the free fatty acids. The temperature at the beginning should be slightly higher than that used for cottonseed oil and should be between 30°-35° C.

The procedure for treating tallows is similar to that of cottonseed oil and coconut oils except that the starting temperature should be about 50°-60° C. The "foots" from the treatment of fats and oils are available as is for soap of lower grades or they may be acidified, purified, and used or sold.

*Fullers Earths*: The greatest percentage of fats and oils bleached for soap making, are bleached by employing the use of earths and carbons. The term fullers earth properly may be applied to any of the natural occurring clay-like mineral substances capable of removing coloring matter and absorbing impurities from fats and oils. Many of these earths are prepared simply by drying and grinding to a powder. Some clays are treated with acid and appear on the market as "activated" bleaching clays. These activated clays are superior to ordinary clays in their ability to absorb colors and remove impurities. The activated clays cost much more than ordinary clay, but since they are ordinarily 2 or 3 times more effective, less is required to produce the same result.

Since a smaller amount of activated clay may be employed, there will be less filter cake, and since this filter cake always contains some of the fat or oil, filtration loss is correspondingly less. It has been the writer's experience that when using certain activated clays, more caution must be used in the time and manner of removing the cake from the filter press than when using ordinary clays, or considerable damage may occur to the filter cloths. Briefly these activated clays are prepared by treating the raw ground clay with a mineral acid under conditions which vary according to the origin and physical characteristics of the clay. The clay is then washed with hot water to remove excess acidity and any soluble products of the reaction, after which it is dried to a cake and finally ground to suitable fineness.

Elaborate theories have been advanced to explain the behavior of clays. Some investigators claim evidence to support absorption mechanism, which others hold the view that it may be purely chemical. For the time being, the writer is perfectly willing to leave this discussion to

others and confine himself to the practical side of things.

The general procedure for using clays to bleach fats and oils is first to dry them. If the material to be bleached has been badly handled by the producer and contains much sediment, water, dirt or mucilagenous matter, it should have a preliminary treatment such as washing with acid or salt water. The fat charge is run into a tank provided with some means of agitation such as a side propeller or vertical shaft with paddles attached. It should also have a closed steam coil to provide the necessary heat for drying. While agitating, the temperature is raised until all water is driven off. Temperatures from 220° to 250° F are attained in most cases. At this point if ordinary earth is used, it should be put in. When using activated clays, the producers usually recommend adding the clay between 180° to 200° F and bringing the temperature up to the maximum. Some oils, such as sesame oil and fish oils are unfavorably affected by high temperatures and while they may appear to be satisfactory at the time of bleaching, they frequently revert to dark color. Fish oils as a rule will permit short periods of heating at about 212° to 220° F. Sesame oil should not be heated above 180° F if best results are desired.

The percentage of clay to be used will depend upon several things. The nature of the fat and the type of clay used are the important factors in determining the percentage. For example when bleaching the better grades of tallow with ordinary clays, the percentage may be from 1 per cent to 4 per cent, while if activated earth be used, it should only require one-half as much, or possibly less. As a rule, crude coconut oil is easier to bleach than the better grades of tallows, and half as much is used as for tallows. When the proper percentage of clay has been added, agitation is continued for a sufficient time to allow the clay to do its work, in most instances 20 to 30 minutes will do. Then with the agitator still running, the mixture is pumped to a filter press. A suitable type of press is the plate and frame type, and it should be large enough to retain all of the clay at one run. At the end of the run, the filter press is "steamed" by blowing live steam into it until as much fat as possible is steamed out. The cake remaining in the press generally contains about 15 per cent of fat or oil and 25 per cent of water.

Various methods have been tried from time to time for the proper disposal of this cake. Usually it is considered worthless on account of the cost of recovering the fat. The manufacturer may find it profitable when fat prices are high to transfer this cake to a tank where it is treated and boiled with caustic soda forming soap which can be grained out with salt, allowed to settle, the soap coming to the top and the clay to the bottom. The soap is removed and used in some lower grade of soap or powder.

Most oils and fats when bleached with clays in the above manner do not show any change in characteristics, the only changes noted are in color and a very slight increase in the percentage of free fatty acids amounting to about 0.1 per cent.

*Bleaching Palm Oil with Clays*: In addition to the bichromate and air bleaching methods for palm oil, considerable quantities of it are bleached by using activated clays, the procedure being to add a predetermined percentage of activated clay usually 3 to 5 per cent, while agitating and at slightly less than 212° F. The temperature is raised to a maximum of about 300° F, agitation being vigorous and constant. The maximum temperature is maintained for about 15 minutes and then the oil is cooled as rapidly as possible, preferably by circulating cold water around the tank or through closed coils. It is filtered at about 215°-225° F. The losses by heat and absorption by this method are greater than that of the air bleach method and should be taken to account when considering its use.

*Carbons*: Activated carbons are a more or less pure form of charcoal characterized by a high adsorptive capacity for certain foreign molecules. This adsorptive power is said to be due partly to the chemical nature of the carbon atom with its attendant free valences and partly to the capillary structure of the carbons, which present enormous adsorptive surfaces. Other factors, such as condensation of gases and vapors in the capillaries, solid solution and chemical combination, are held to contribute to its adsorptive power.

Most of the activated carbons on the market at present are in the form of black powders. Some of these carbons are extremely fine. One manufacturer commenting on the fineness of one of their carbons states that it has been reported that one gram of their powder contains 120,500,000,000 particles. One can easily imagine that there must be an immense surface exposure possible in such a product. The cost of clays being less than carbon, it is advisable to use fullers earth or similar clay along with activated carbon. There is no interference between the earth and carbon when used together. Each material has its work to do, the carbons being effective on colors not affected by the clays. It will be found that very small percentages of activated carbon will be sufficient, usually from 0.1 per cent to 0.4 per cent being enough to attain maximum color removal. Extreme care should be taken when filtering to see that everything about the filter press is tight, since some carbon particles are so small they may pass through.

It is desirable to use some kind of filter aid along with carbons. Unless this is done, the carbon particles are driven into the cloth and it quickly clogs. The filter aids used are usually porous mineral powders of high silica content, inert and insoluble which do not exert any noticeable bleaching effect. They are used to coat the filter cloth and thus protect it from the carbons and clays and in doing so, maintain a free flow of the oils and fats. The filter aid is not added to the material being bleached but is prepared separately. Usually from 0.1 per cent to 1.0 per

cent of the weight of the fat or oil will be sufficient. A small quantity of the fat or oil agitated in a separate tank with the filter aid is prepared and pumped through the filter press forming a thin protective coat on the cloth. This should be done just before pumping the bleached liquid fat through the press, so that the coating will not have too much time to settle.

*Distillation or Steam Treatment*: Bleaching or deodorizing by steam treatment in vacuum, after preliminary refinement, may be applied to almost all oils and fats. The product of this procedure may be considered a high type of fat. There seems to be little or no material change of the fat in the process, and no tendency to revert with age.

The general procedure is to treat the fat with an earth or activated clay, heating to about 200° to 220° F and agitating for several hours, after which the liquid is filtered. It is then transferred to suitable equipment on which is maintained as high a vacuum as possible. The oil is heated to a temperature of 450° F to 550° F. Superheated steam is passed into the oil, the volatile impurities and free fatty acids are carried off and along with the steam are condensed. When the percentage of free fatty acids of the oil in the vessel have been reduced very low, usually 0.2 per cent to 0.5 per cent, the steam is shut off and the oil is kept under vacuum until cold.

By this method some very dark fats and oils are brought up to a beautiful white color. Palm oils treated by this process are available for edible purposes, being practically odorless, tasteless and white.

*Bleaching Soaps*: The best way to improve a soap is to improve the raw materials from which it is manufactured. Let us assume however that for one reason or other some small manufacturer cannot afford to install bleaching apparatus,—or perhaps there is not available plant space. He still realizes the advantage of improving his soap and wants to do something about it. He might possibly buy some fats that have been improved by bleaching, but he ordinarily has to pay too muchfor them. There remains the possibility of bleaching the soap right in the kettle. About the only equipment needed is a small tank or wooden tub, and a couple of dippers and paddles. There are a number of methods that can be used, but we will briefly give three of the better known.

1. Bisulfite of Soda.
2. Bleaching Powder.
3. Stannous Chloride.

Here, as indicated, the methods are chemical and the process depends upon reduction, as compared to bleaching of fats where the processes for the most part are non-chemical and in some instances depend upon color destruction by oxidation.

When employing bisulfite of soda the solution is made from the following materials, (sufficient for about 15,000 lbs. of kettle soap)

10 lbs. Finest zinc dust.
100 lbs. 35° Be. Bisulfite of Soda.
10 lbs. Sulfuric Acid 60°.
100 gal. Water.

The water is run into a wooden tub, and the bisulfite added. Then stir in the zinc dust and finally while stirring, the sulfuric acid. When well mixed, cover and keep cool while settling for several hours.

If bleaching powder is to be employed, the following materials are needed:

100 lbs. Bleaching Powder.
200 lbs. Water.
Q. S. Bicarbonate of Soda.

Dissolve the bleaching powder in the water then add bicarbonate until no further precipitate is formed. Allow to settle. About one hundred pounds of this mixture will do for 15,000 pounds of soap in the kettle.

When using stannous chloride crystals, 18 to 20 pounds are dissolved in water. An excess of water will partly decompose these salts, therefore add the water slowly and stop at the first sign of milky appearance. This should be sufficient for about 10,000 pounds of soap in the kettle.

The procedure for using these solutions is practically identical in all cases. It should be remembered that when using the bisulfite or bleaching powder solutions, the clear liquid on top is to be used, leaving out anything that has settled to the bottom. In all cases, the liquids should be introduced into the bottom of the kettle and not thrown upon the top, although an exception may be made in the case of stannous chloride if necessary. The introduction of the liquids can be made by pumping or by compressed air.

The method of procedure, briefly, is to saponify the charge of fat or oil, and grain out with salt. After allowing the lye to settle, it is removed, and the kettle is boiled while water is being added to close the soap. Now the soap is slightly grained by running in caustic soda, but only a sufficient quantity to open the soap and not enough to permit lye to settle out. At this point, the liquid bleach is introduced into the kettle. Boiling should continue for about 30 minutes before graining, but when using bleaching powder several hours may be required to remove the odor of chlorine.

The writer has had the opportunity to investigate the possibility of using hydrogen peroxide and potassium persulfate as a bleach for soap, and found that on the better grades of soaps, the improvement was very little if any. One interesting feature was brought to his attention, that is, the ability of the peroxide bleach to reduce or destroy the green cast often noted in the lower grades of soaps.

The process at its best has the very objectionable feature of being somewhat dangerous, unless extreme care be used. Only small quantities of peroxide can be added at a time otherwise the extreme swelling and frothing threatens to "boil over" the kettle. This of course made the process very slow.

It would be well to remember that while these methods will improve the appearance of the soap there is also the tendency to revert to color on aging and therefore these soaps should not be stocked up too much ahead of sales.

# Sanitary Products SECTION

A Section of "SOAP" dealing with

**Insecticides • Disinfectants • Moth Products**
**Floor Products • Polishes • Chemical Specialties**

# HIGHER KILL—

*Introducing*

## BPE 191+IN 930

Releases now appearing in newspapers and trade publications announce the development of I N 930, a new product of the laboratories of E. I. du Pont de Nemours & Co., Inc. I N 930 is an alcoholic derivative of a vegetable acid, and will be marketed by John Powell & Co., Inc.

In combination with POWCO BRAND BASIC PYRETHRUM EXTRACT, this makes a 20-to-1 concentrate to give you higher killing power at a lower cost.

Because I N 930 must be used with Pyrethrum, we give you this combination in

## B P E 191+I N 930

When you use B P E 191 + I N 930, you proceed just as formerly—no need to change your manufacturing set-up whatsoever—but your product has a higher kill and your cost adds up to a lower figure in dollars.

*"Killing Power—*

POWCO BRAND
REG. U.S. PAT. OFF

**JOHN POWELL**
**114 E. 32nd Street**

# LOWER COST

## BPE 191+IN 930

Non-poisonous —by thorough topical, sub-cutaneous injection, gastro-intestinal, and inhalation tests.

Non-staining —by trials on numerous materials. It is lighter in color.

Non-irritating —to eyes, mucous membranes or skin. A trial will quickly satisfy you.

Sparkling clear —even after long storage. It is completely soluble in petroleum.

Stability —Fly spray samples made up two years ago are just as potent and clear now as when made.

Odor and Taste—Mild and not unpleasant.

Cost —Higher kill at lower cost. Puts a Grade B insecticide into the Grade A class.

For those who prefer a straight Pyrethrum Extract, we continue to offer POWCO BRAND Basic Pyrethrum Extract, the standard of many years.

*That's The Thing!"*

**& COMPANY, Inc.**
**New York, N. Y.**

POWCO BRAND
REG. U.S. PAT. OFF

# News . . .

# D & O ESSENOL "OT"

**"Oil Type"**

## Grade "B" Sprays are raised to Grade "A" by the addition of D & O ESSENOL "OT"

Numerous Peet-Grady tests have demonstrated that the addition of a small proportion of D & O ESSENOL "OT" to the average Pyrethrum or Thiocyanate spray increases the kill at low cost.

Report on spray containing { 5% Pyrethrum No. 20 Concentrate / 95% Kerosene

## Certificate of Analysis

April 25, 1938

The biological assay of the above sample was carried out in accordance with the procedure prescribed under the Peet-Grady method, and controlled against the Official Test Insecticide. The following table gives the data for the individual runs for both the sample and Official Test Insecticide.

| | *Test Sample* | | | *Official Test Insecticide* | | |
|---|---|---|---|---|---|---|
| *Run No.* | *No. Flies* | *Percent Knockdown* | *Percent Kill (24 hrs.)* | *No. Flies* | *Percent Knockdown* | *Percent Kill (24 hrs.)* |
| 1 | 99 | 98 | 67 | | | |
| 2 | 101 | 95 | 63 | | | |
| 3 | 108 | 97 | 66 | | | |
| 4 | 105 | 98 | 63 | 101 | 97 | 64 |
| 5 | 100 | 96 | 69 | | | |
| 6 | 109 | 99 | 62 | | | |
| 7 | 98 | 98 | 63 | 100 | 96 | 67 |
| 8 | 104 | 98 | 64 | | | |
| 9 | 101 | 100 | 62 | | | |
| 10 | 101 | 99 | 64 | 104 | 96 | 60 |
| Total | 1026 | | | 305 | | |
| Average | | 97.8 | 64.3 | | 96.3 | 63.7 |

A comparison of the above data shows that the sample has an activity of about 101 per cent. The sample, therefore, is of the same order of toxicity as the Standard and rates as Grade "B".

SEIL, PUTT & RUSBY, Inc.
*By Harvey A. Seil, Ph.D.*

With D&O ESSENOL "OT" at $2.25 per gallon, normal Grade "B" sprays may be raised to Grade "A" as demonstrated by the certificate on the opposite page, at little additional cost, imparting to the spray an agreeable odor that helps to reduce the cost of added perfume.

**DODGE &**

**180 VARICK STREET**

D&O

ESTABLISHED IN 1798

# for fly sprays— to raise the kill economically!

In these transcriptions of Certificates of Analysis from a well-known commercial laboratory, the figures SPEAK FOR THEMSELVES, showing that D & O ESSENOL "OT" increases the kill.

Report on spray containing { 5% Pyrethrum No. 20 Concentrate; 3% D & O ESSENOL "OT"; 92% Kerosene }

## Certificate of Analysis

April 25, 1938

The biological assay of the above sample was carried out in accordance with the procedure prescribed under the Peet-Grady method and controlled against the Official Test Insecticide. The following table gives the data for the individual runs for both the sample and Official Test Insecticide.

| | *Test Sample* | | | *Official Test Insecticide* | | |
|---|---|---|---|---|---|---|
| *Run No.* | *No. Flies* | *Percent Knockdown* | *Percent Kill (24 hrs.)* | *No. Flies* | *Percent Knockdown* | *Percent Kill (24 hrs.)* |
| 1 | 98 | 98 | 68 | | | |
| 2 | 104 | 100 | 72 | | | |
| 3 | 108 | 99 | 78 | | | |
| 4 | 101 | 97 | 70 | 107 | 97 | 57 |
| 5 | 100 | 100 | 77 | | | |
| 6 | 101 | 100 | 72 | | | |
| 7 | 101 | 99 | 75 | 105 | 97 | 59 |
| 8 | 104 | 100 | 71 | | | |
| 9 | 101 | 100 | 73 | | | |
| 10 | 105 | 99 | 73 | 110 | 98 | 64 |
| Total | 1023 | | | 322 | | |
| **Average** | | **99.2** | **72.9** | | **97.3** | **60.0** |

**A comparison of the above data shows that the sample has an activity of about 122 percent. The sample, therefore, is considerably more toxic than the standard, and rates as Grade "A."**

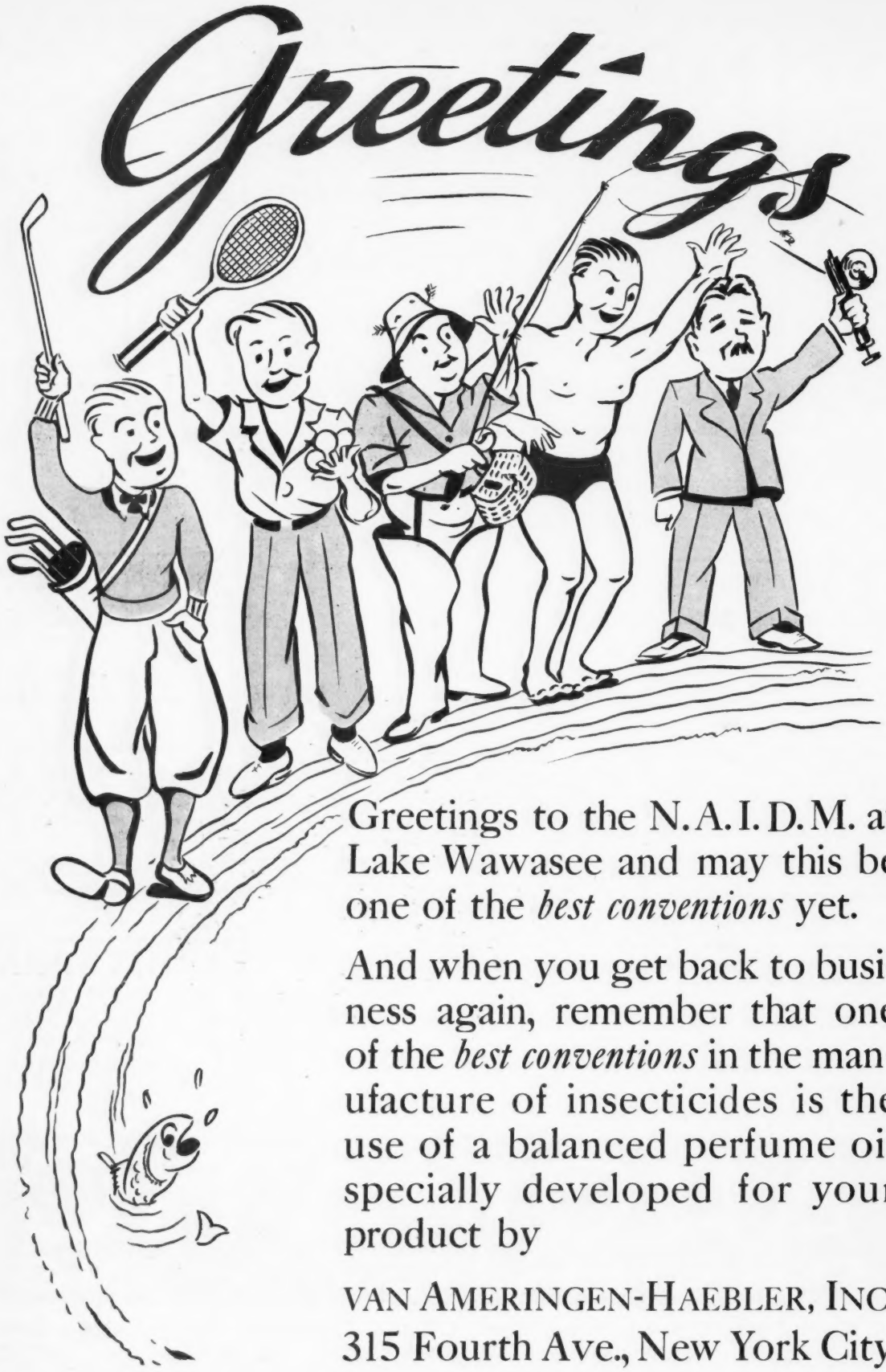
**SEIL, PUTT & RUSBY, Inc.**

***By Harvey A. Seil, Ph.D.***

This certificate shows that by adding 3 per cent of D&O ESSENOL "OT" to a normal Pyrethrum spray the average 24 hour kill was raised 12.9 above the OTI, thus making a *high* Grade "A" product. In the same way Thiocyanate sprays are increased in kill by adding D&O ESSENOL "OT."

# & OLCOTT COMPANY

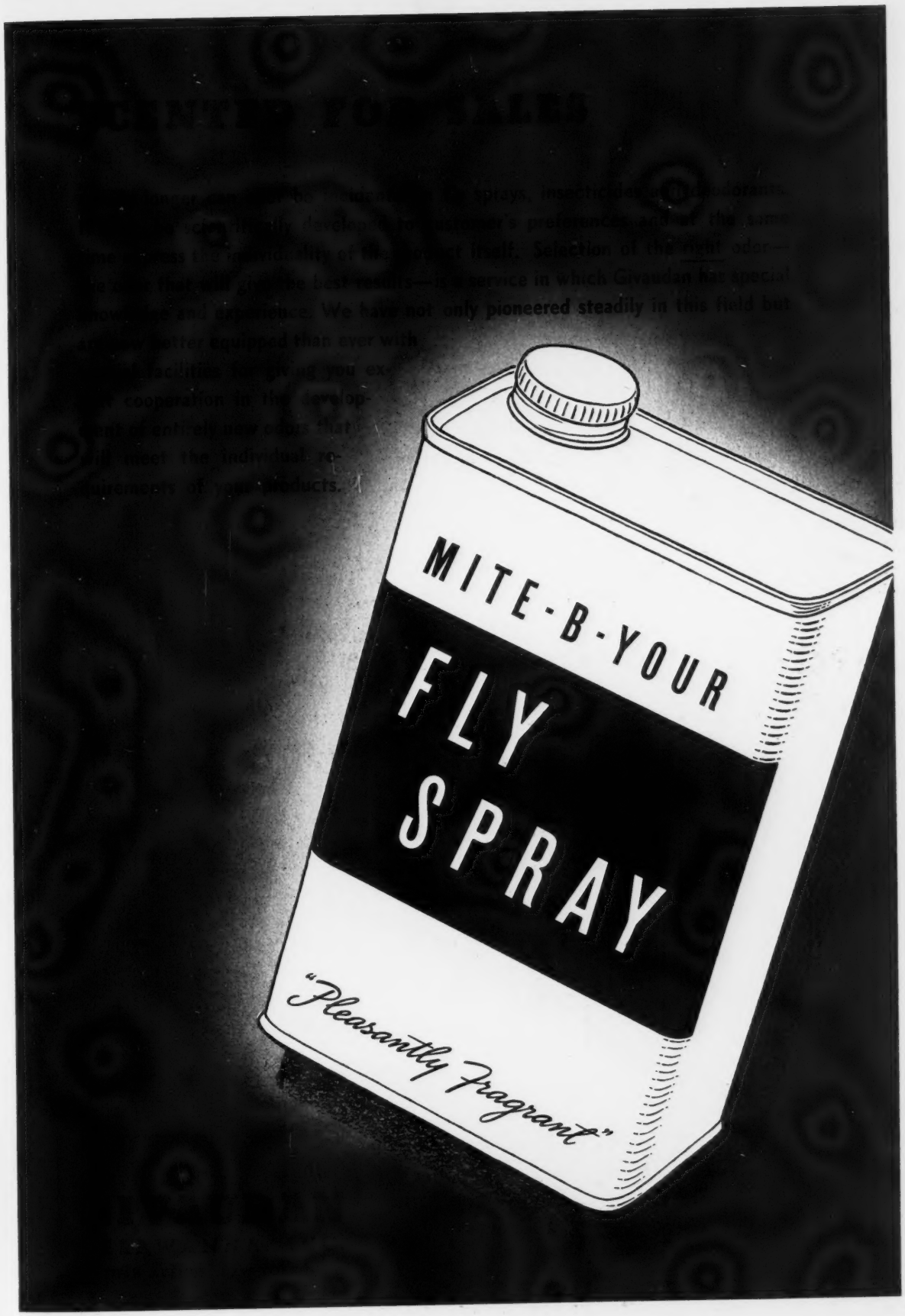
**NEW YORK**




Greetings to the N. A. I. D. M. at Lake Wawasee and may this be one of the *best conventions* yet.

And when you get back to business again, remember that one of the *best conventions* in the manufacture of insecticides is the use of a balanced perfume oil specially developed for your product by

VAN AMERINGEN-HAEBLER, INC.
315 Fourth Ave., New York City


MITE-B-YOUR
FLY
SPRAY
"Pleasantly Fragrant"

# when you are in the market... SEE IF KOPPERS MAKES IT


**KOPPERS PRODUCTS**

CRESOL, U.S.P. . . . PHENOL . . . CRESYLIC ACID, 98% to 100%, Straw Color . . . TAR ACID OILS . . . NEUTRAL HYDROCARBON OIL . . . NAPHTHALENE . . . BENZOL, (all grades) . . . TOLUOL (Industrial and Nitration) . . . XYLOL (10° and Industrial) . . . SOLVENT NAPHTHA (including High Flash) . . . SHINGLE STAIN OIL . . . REFINED TARS . . . INDUSTRIAL COAL TAR PITCHES . . . FLOTATION OILS . . . CREOSOTE . . . TANKS AND TANK WORK . . . REMOVAL AND RECOVERY APPARATUS . . . COAL TAR ROOFING . . . WATERPROOFING AND DAMPPROOFING MATERIALS . . . TARMAC ROAD TAR . . . BITUMINOUS BASE PAINTS . . . "COAL AND COKE" . . . FAST'S SELF-ALIGNING COUPLINGS . . . AMERICAN HAMMERED PISTON RINGS . . . GAS, AIR AND WATER VALVES . . . PRESSURE-TREATED TIMBER PRODUCTS . . . BRONZE AND IRON CASTINGS

A producer of natural gas uses a large amount of power for compressing and other operations. The cheapest source for this power was natural gas, but the gas had a high hydrogen sulfide content which causes excessive deterioration to gas engines. Koppers solved this problem by installing a Koppers Phenolate Purification Process. It removes the hydrogen sulfide from the gas and recovers it in a form which is readily convertible into sulfuric acid, for which there is a ready market.

**PRODUCTS OF THE WHITE TAR COMPANY OF NEW JERSEY, INC.**

REFINED NAPHTHALENE
Crushed, Crystals, Powder, Lump, Chips, Flakes. For use in manufacture of deodorizing blocks, moth preventives and other insecticides.
Also Naphthalene in Balls, Blocks, Tablets.
COAL TAR DISINFECTANTS
Co-efficients 2 to 20 plus, F.D.A. Method
CRESOL AND CRESYLIC DISINFECTANTS
PINE OIL DISINFECTANTS
PINE OIL DEODORANTS
CRYSTAL AND BLOCK DEODORANTS
LIQUID INSECTICIDES
DEODORIZING BLOCKS
Pressed Naphthalene or Paradichlorobenzene. Various sizes and shapes. Perfumed and plain. Bulk industrial packages, retail packages.

**KOPPERS COMPANY**
**PITTSBURGH**

**U**niform

**L**eaves no oily residue

**T**horoughly inspected

**R**efined solely as a carrier for insect killers

**GOING . . .**

**A**chieves a better product

**GOING . . .**

**S**afe insecticide base

**E**xtremely effective

**GONE!**

**N**o petroleum odor

**E**vaporates readily

# ATLANTIC ULTRASENE

***—A BETTER BASE FOR BETTER INSECTICIDES***

Successful insecticide manufacturers choose Atlantic Ultrasene for their spray base.

Atlantic Ultrasene is refined solely for use as a carrier for insect killers. Unlike a kerosene base, Ultrasene evaporates readily. It leaves no disagreeable odor, no oily residue. Very naturally proprietors of restaurants, markets, hotels are well aware of the advantages of an Ultrasene-base insecticide. Very naturally they are insisting upon a top-notch insecticide without any objectionable odor.

Find out more about Atlantic's popular spray base. Send for further information and liberal experimental samples. The Atlantic Refining Co., Specialty Sales Dept., 260 South Broad Street, Philadelphia, Pennsylvania.


GREATER sales of Formaldehyde preparations such as disinfectant, antiseptic and deodorant sprays, cavity fluids, etc. are frequently limited by the inherently disagreeable odor of Formaldehyde itself. To overcome this difficulty, Felton Chemical Co. has developed a line of special aromatics . . . called FORMAROMES, which neutralize the Formaldehyde odor and impart an agreeable, pleasant scent.

**FORMAROMES—SERIES A**
**for full strength Formaldehyde preparations.**

**FORMAROMES—SERIES B**
**for weaker Formaldehyde solutions.**

**SEND US A SAMPLE OF YOUR FORMALDEHYDE PREPARATION. OUR LABORATORY WILL RECOMMEND THE PROPER FORMAROME TO USE WITH IT.**

FELTON Quality

# FELTON
## CHEMICAL COMPANY, INC.
603 JOHNSON AVE., BROOKLYN, N. Y.

**Manufacturers of AROMATIC CHEMICALS, NATURAL DERIVATIVES, PERFUME OILS, ARTIFICIAL FLOWER AND FLAVOR OILS**

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Los Angeles, Calif. 4727 W. Washington Blvd.

# Welcome to Indiana!

THE 24th annual summer meeting of the National Association of Insecticide & Disinfectant Manufacturers opens at The Spink-Wawasee, on Lake Wawasee, Indiana, on June 13. Many matters of importance to our member firms and to the insecticide and disinfectant industries will be discussed. A cordial welcome awaits you in Indiana and it is my hope that every member will be present for the full meeting.

J. L. BRENN,
President.

▼

## National Association of Insecticide & Disinfectant Manufacturers, Inc.

110 East 42nd Street — New York

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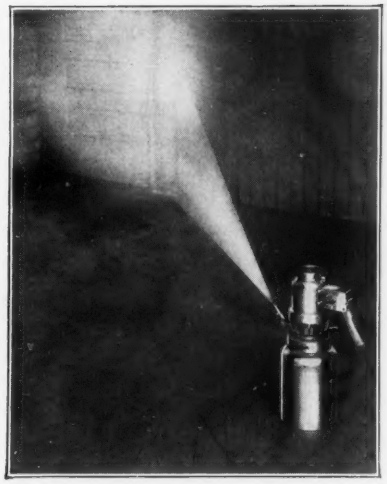
# BREUER'S TORNADO ELECTRIC SPRAYERS COST LESS! WHY? BECAUSE IT'S THE PRICE OF APPLICATION THAT COUNTS.



## PUT IT TO THIS TEST

**What good is a cheap sprayer if it lasts but a few months and then breaks down, only to be set aside by your customers, with consequent dissatisfaction and no insecticide used? You can depend on Breuer's Tornado Electric Insecticide Sprayers to last for years and give complete satisfaction, thus increasing your reorders.**

**Don't be misled by cheap prices. 90% of the manufacturers use Breuer's Tornado Electric Sprayers.**

To get real results from your insecticide, use the Model 36, 53, or 54 Compressor Type Sprayers with exclusive volume control. Greater efficiency and longer life of these sprayers will make more profit for you in repeat orders and increased business. Build better business with Tornado quality!

**MODEL 36** Our largest sprayer combines automatic time switch, volume air control, one gallon capacity, 1/3 H.P. G. E. Universal Motor among its features. Sprays large volume great distance in finest gas formation. Penetrates every possible source of insect existence.

**MODEL 54** This model is exactly like the Model 36 except for smaller capacity. 1/8 H.P. G. E. Motor with only one quart container. Also, like the Model 36, sprays desired amount of insecticide and then shuts off. Time switch may be set one to thirty minutes.

**MODEL 53** Exactly like the Model 54 except that it has no automatic time switch. Adjustable for fine or heavy spray. As with all Tornado Sprayers, the patented principle of heating and compressing material does the trick.

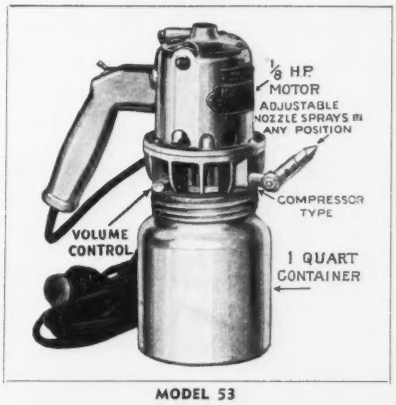
***Write for latest bulletins.***

**BREUER ELECTRIC MFG. CO.**
5118 N. Ravenswood Ave. Chicago

***We do not sell insecticides. Our business is manufacturing sprayers.***


MODEL 36


MODEL 54




MODEL 53

# For the Best Results Use

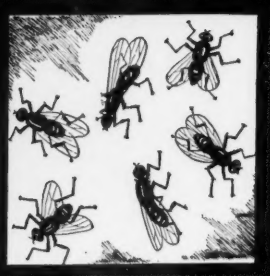
**Yarmor 302* Pine Oil**

Cattle sprays containing Yarmor 302 Steam-distilled Pine Oil insure a high kill; have maximum repellency; do not blister hides; do not taint milk if usual care is exercised; do not stain; do not cause matting of hair; help to heal open cuts and wounds.


Disinfectants containing Yarmor 302 kill many disease-producing germs; are non-poisonous to humans; will not corrode metals; form a milky white emulsion with water; leave a pleasant piney aroma.

**D.H.S. Activator***

Pyrethrum household sprays containing D.H.S. Activator have increased killing power and prolonged toxic activity. The use of D.H.S. Activator results in uniform insect control, cost control, and quality control.



*Reg. U. S. Pat. Off. by Hercules Powder Company

## Hercules Naval Stores

HERCULES POWDER COMPANY
Incorporated
961 MARKET STREET
WILMINGTON
DELAWARE

**BRANCH OFFICES:**
Chicago
New York
St. Louis
Salt Lake City
San Francisco

1913 - SERVING INDUSTRY - 1938
25th Anniversary Year

Return the coupon for further information.

QQ-70

Hercules Powder Company, 961 Market Street,
Wilmington, Delaware

Please send information about:

Yarmor 302 Steam-distilled Pine Oil in cattle sprays. ☐
Yarmor 302 Steam-distilled Pine Oil in disinfectants. ☐
D.H.S. Activator in pyrethrum household sprays. ☐

Name _____

Company _____

Street _____

City _____ State _____

# WAKE UP YOUR PACKAGE

*It May Become a* **Rip Van Winkle!**

**MODERNIZE!.. Revive trade interest in your merchandise with the dynamic appeal of NEW Package design. ★ To brand names that have long suggested value, "NATIONAL" brings the strategy of smart designing and color-lithography that sets a Standard of Comparison for Container Display.**

***"NATIONAL" WAKES UP Dormant PACKAGE Sales!***

**NATIONAL CAN CORPORATION**

SUBSIDIARY OF McKEESPORT TIN PLATE CORPORATION

EXECUTIVE OFFICES • 110 EAST 42nd STREET • NEW YORK CITY

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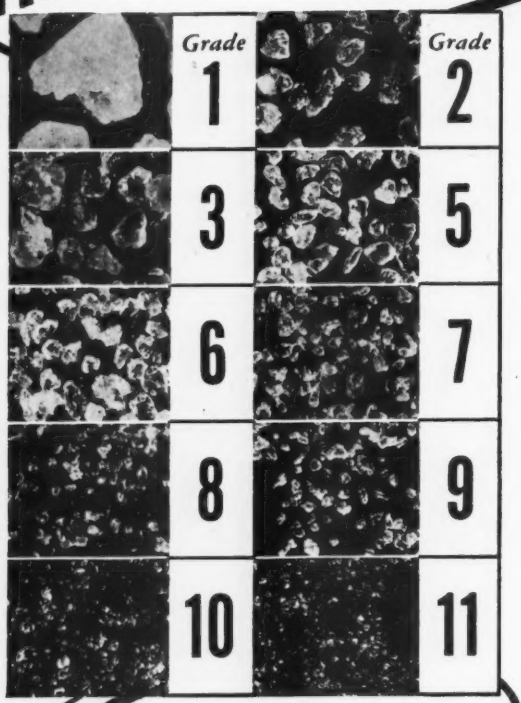
# THE RIGHT SIZE FOR SALES...
# THE *Exact* SIZE FOR PROCESSING!

## SOLVAY
TRADE MARK REG. U. S. PAT. OFF.

## PARA-DICHLOROBENZENE




## Moth Killer ... Insecticide ... Powerful Deodorant ...

These are actual size photos of ten grades of Solvay Para-dichlorobenzene. Each is a first class 3-way sales pusher because it meets the demands of the market . . . brings *your* price because it suits your customers' requirements.

If you manufacture in block, one of these *free flowing* sizes will undoubtedly be the *exact* size required for the pressure and feed of your blocking machine. *The exact size for your machine means less rejections at the packaging end!*

If you sell graded para-dichlorobenzene, there is an *exact* size for the most attractive customer appeal in colored or plain transparent packaging—the right size for your sifter top cans.

YOU CHECK THE GRADE . . . WE'LL DO THE REST. We will send you a sample of the grade you check off . . . send you complete information on Solvay Para-dichlorobenzene . . . or if you are uncertain of your requirements our technical staff is ready to help you select the most efficient grades for your particular purposes.

## A RIGHT SIZE FOR EVERY REPACKAGING REQUIREMENT...

| 1 | 2 | 3 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|

**SOLVAY SALES CORPORATION**
40 RECTOR STREET NEW YORK, N. Y.

*Gentlemen:* Please send me a sample of the grade I have checked off above.

*Name*_____

*Address*_____

*City*_____ *State*_____

AJ-6


# pes-tox

## *the modern insecticide*

### *odorless or fragrantly perfumed*


think of the many places where a perfumed fly spray is objectionable—and where an odorless insecticide would be welcomed with open arms—hotels, bakeries, restaurants, stores, theatres, cocktail rooms, dairies, home use, groceries, office buildings, etc. You will find *odorless pes-tox* a consistent repeater on sales—once your customer has used it no other spray satisfies.



and, on the other hand, there are users of fly sprays who like a pleasantly scented insecticide—for this trade we recommend *perfumed pes-tox*—perhaps lilac, rose, newmown hay, or jasmin.


aside from crushing flies between two blocks of wood, we know of no surer way of killing them than using *pes-tox household insecticide*—swift and certain death to insects.


***for the wholesale trade only***

***for a sample write***

**Baird & McGuire Inc.**
**Holbrook, Mass.**
**&**
**Saint Louis, Mo.**
**1200 Switzer Ave.**

**New York City and New Jersey Sales Office**
**79 Wall Street, New York**

# Sanitary Products

A Section of SOAP

Official Publication, Nat'l. Assn. of Insecticide & Disinfectant Manufacturers

DEPARTING from the custom of previous years, members of the National Association of Insecticide and Disinfectant Manufacturers meet this year for their 24th annual mid-year meeting at Lake Wawasee, Indiana. This choice of a meeting site far away from the distractions of the city will make it possible, it is hoped, to keep the whole convention group closer together as one big party. There will be no little groups going off here or there on private excursions, and attendance at business sessions should benefit from the inability of any one to slide down town for a few calls on some one else's customers. A resort location for the convention also gives the entertainment committee more latitude in choice of diversions and the chairman reports a number of innovations in the program this year. In the business sessions attention will be focussed on such subjects as new legislation and its effect on the industry, marketing trends, testing and other important matters.

THE Dennis patent suit which was expected to come to trial in the Milwaukee Courts early this month resembles in many respects the celebrated Terry fly spray patent suit which was decided just about nine years ago. Just as in the Terry case the plaintiff claimed the exclusive right to manufacture petroleum - pyrethrum spray insecticides, so in the Dennis suit the holder of this as yet untested patent claims sole right to the use of cubé as an ingredient in insecticides of either the powder or extract type. The leaders of the industry have been quick to recognize, as they did in the Terry case, that a verdict against the present defendant, Agicide Laboratories, might impose restrictions on the rest of the industry. Thus they have come to the aid of the defendant voluntarily and promise to give the claims of the Dennis patent a thorough test. In the interests of the bulk of the industry and the widest development of cubé insecticides it is to be hoped that the broad claims of the Dennis patent will not meet with the approval of the court.

FROM the west coast comes an answer to our rather severe and repeated criticism of the multiplicity of state laws and regulations requiring product registration, special labeling, formula disclosure, licensing, and the like. Our correspondent is convinced that the advantages of these various and sundry state laws outweigh the disadvantages, and that they protect the reputable manufacturer as well as the general public. He presents some convincing arguments which are published elsewhere in this issue. However, we continue to disagree with him.

After studying several hundred new state laws, regulations, and interpretations over the past year or so, we are more than ever convinced that the majority are conceived in ignorance or with the deliberate intention of "soaking" out-of-state manufacturers,—that they are on the whole a grab for more and more tax money where there will be no penalty in lost votes at home. Unquestionably, there are outstanding exceptions in the case of a few states,—but very few.

J. L. BRENN
Huntington Laboratories, Inc.
NAIDM President

# Insecticide-Disinfectant

MARKETING trends in insecticides, public institutions as a market for disinfectants and insecticides, future of the insecticide market on the farm, the current situation in sanitary chemical markets, new legislation and its effects on disinfectants, cattle spray developments, testing insecticides against crawling insects, new insecticide marketing problems,—these are some of the more important topics which will be the subject of addresses and reports at the 24th annual summer meeting of the National Association of Insecticide & Disinfectant Manufacturers to be held June 13, 14 and 15 at The Spink-Wawasee, Lake Wawasee, Indiana. A report and discussion of the latest revised Peet-Grady method for testing liquid spray insecticides is also scheduled.

The meeting will extend three days, with general business sessions each morning, and the afternoons given over to special group meetings and committee conferences. For two afternoons, the entertainment committee has planned a special baseball game and the annual golf tournament of the Association. From early indications, about two hundred leading manufacturers in the insecticide, disinfectant, and sanitary chemical field will be in attendance. J. L. Brenn, of the Huntington Laboratories, Inc., Huntington, Ind., president of the Association will preside at the meeting assisted by vice-presidents W. J. Zick of Stanco, Inc., New York, and Wallace Thomas of Gulf Refining Co., Pittsburgh.

Preceding the opening of the regular sessions of the convention, a meeting of the Board of Governors will be held on Sunday evening, June 12, at Lake Wawasee. Scheduled for the opening session on June 13 are addresses by J. L. Brenn, president, on "Business and Politics," by Carl W. Dipman of "Progressive Grocer" on "Marketing and Trends in the Grocery Trade," and by N. A. Schull of the Ball State Teachers College, Muncie, Ind., on "Maintenance of Sanitation in Public Institutions." Tuesday morning, June 14, reports from the NAIDM Fellowship Committee on Methods for Testing Insecticides against Crawling Insects by Dr. F. L. Campbell of Ohio State University, on "Cattle Spray Technique" by Prof. Edward Searles of University of Wisconsin, on "Current Insecticide Marketing Problems" by H. A. Thomas of Shell Petroleum Corp., and on "The Effects of Pyrethrins I and II on House Flies" by W. N. Sullivan of the U. S. Department of Agriculture, will be presented.

On Wednesday morning, June 15, reports on legislation by C. L. Fardwell of McCormick & Co., on "Recent Developments in Germicides, Disinfectants and their Advertising" by George W. Hoover of Washington, on "Future of Household Insecticides on the Farm" by Prof. J. J. Davis of Purdue University, and on "Let's Hear from Sanitary Chemicals" by Melvin Fuld of Fuld Brothers.

NAIDM meets at The Spink-Wawasee, Lake Wawasee, Ind.

# Meeting, June 13-15

The entertainment program in charge of Robert S. Solinsky of the National Can Co., Chicago, has numerous events scheduled beginning with the annual golf tournament on Monday afternoon, June 13, on the Wawasee course. Numerous prizes which have been purchased from a fund donated by various associate members will be awarded in the tournament. A special soft-ball baseball game has been arranged for Tuesday afternoon between the "Disinfectant Demons" captained by J. L. Brenn and the "Insecticide Bearcats" headed by W. J. Zick. A horseshoe pitching tournament has also been arranged to be held on Tuesday afternoon, both doubles and singles, for those who come from "down on the farm." Several prizes will also be awarded for this competition. Entries in all events are to be made with Mr. Solinsky at the convention. Other entertainment features scheduled include horseback riding under the direction of F. O. Huckins of Sinclair Refining Co., Chicago, and fishing and sailing for those who desire to make arrangements. The convention will close Wednesday evening, June 15, with an informal dinner at The Spink-Wawasee. A special show, the nature of which has not been revealed, has been planned by the committee. Convention registration fee includes the cost of participation in all events except fishing, boating, riding and golf greens fees.

**Committee Chairmen**

*General Convention* — John Powell, John Powell & Co.

*Program*—W. J. Zick, Stanco, Inc.

*Transportation*—H. W. Hamilton, White Tar Co. of N. J.

*Entertainment*—R. S. Solinsky, National Can Co.

*Hotel*—J. L. Brenn, Huntington Laboratories.

*Publicity*—I. P. Mac Nair, *Soap.*

*Registration*.— D. W. Lynch, John Powell & Co.

The program of the meeting sessions follows:

**PROGRAM**

**Monday—June 13, 1938**

9:00 A.M. REGISTRATION

Meeting called to order by President J. L. Brenn, Huntington Laboratories, Inc.

Announcements.

**"Business and Politics"** — President J. L. Brenn.

Appointment of Committees.

Report of Treasurer — John Powell, John Powell & Co.

Report of Membership Committee—Russell Young, Davies-Young Soap Co.

Report of Entertainment Committee —R. S. Solinsky, National Can Corporation.

ROLL CALL.

Introduction of Guests.

Report of Executive Office Committee — Ira P. MacNair, MacNair-Dorland Co.

**"Marketing and Trends in the Grocery Trade"**—Carl W. Dipman, Editor, "Progressive Grocer," New York.

**"Maintenance of Sanitation in Public Institutions"**—N. A. Schull, Business Manager, Ball State Teachers College, Muncie, Indiana.

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# . . . dairy market for SANITARY CHEMICALS

FROM the time milk leaves the cow until the bottled product enters the home of the ultimate consumer, its production and handling represent a myriad of problems in sanitation. All parts of the milk producing industry of the country as a consequence are potentially large users of sanitary chemicals,—detergents, disinfectants, insecticides, and like products of a wide variety. The ever-growing consciousness of the necessity for maximum cleanliness and sanitation goes hand-in-hand with a growing demand for sanitary chemicals necessary to maintain such a standard.

In order to study the size and extent of the market for sanitary chemicals in the dairy, milk bottling and milk product industries, a number of representative producers and distributors in the New York milkshed were called on for information recently. The results of the investigation should give a fairly accurate picture of the market as a whole, since the New York city milkshed represents a large slice of the entire industry, comprising as it does all of the State of New York, which is the second largest dairy state in the United States, plus 3 counties in southwestern Vermont, 12 counties in northern and eastern New Jersey, and 26 counties in northeastern and northern Pennsylvania. In New York City alone, over 4,000,000 quarts of milk are consumed daily, or the output from more than 500 country plants, representing about 65,000 dairy farms.

Before quoting actual consumption figures, a brief discussion of the sanitation and cleanliness problems involved in the operation of the large dairy farms and milk bottling plants, beginning at the dairy barn and ending with the appearance of the daily milk supply on the consumer's doorstep, will give an idea of the wide scope and extensive use for sanitary chemicals. Ranking first in importance in the successful operation of a dairy is a healthy herd of milch cows. Healthy cattle require clean barns, dust proof and dirt free walls and ceilings; clean bedding, changed daily and sprayed often with a disinfectant; the daily removal of manure, accompanied by liberal spraying with disinfectant of the areas where the manure had been, and spraying of the manure itself with insecticides; the frequent use of livestock sprays on cattle to protect them from flies; and the use of disinfectant for washing cattle udders before milking.

Then, to protect the quality of the milk produced, rigid sanitary measures must be observed in the cleansing and sterilization of all milking utensils,—pails, delivery cans, cooling tanks, milking machines, etc., by the use of detergents and disinfectants. The personal cleanliness of milkers and all persons handling milk must be carefully watched. If hand milking is done, milkers are required in some cases to wash their hands in a disinfectant solution before and after milking each cow. And in other cases where machines are used, these must also be washed with a disinfectant before and after milking each cow.

From the veterinarian of one of the large milk distributors in the New York milkshed, a few of the details concerning the observance of maximum sanitary conditions on the dairy farm has been obtained. The walls and ceilings of dairy barns, he said, are washed by spraying at least twice a year with chloride of lime in water. This is frequently done by outside contractors at a cost of $3.50 a dairy. In the production of Grade A milk, this process is more frequent, about four or five times a year. Clean bedding of milch cows is very important, since it is through insanitary bedding that infections, such as mastitis and Bang's abortion disease, are supposedly carried.

Of all the diseases that affect the dairy cow, the one causing the greatest economic loss to dairymen is mastitis. There is no known cure for it because the milk secreting cells that are destroyed during an attack are never replaced by other secreting or glandular cells, but always by hard scar tissue. Therefore, all efforts toward controlling the disease in the herd must be directed toward prevention rather than any attempted cure. Among the major causes are insanitary conditions in and about the dairy barn, especially infected bedding, and failure by milkers to sterilize their hands before milking each cow, or failure to wash milking machines with a sterilizing solution.

Another disease in cattle spread by insanitary conditions arising from the too infrequent use of disinfectants and insecticides, is Bang's abortion disease. At present, the State of New York pays an indemnity to farmers for the loss of cattle through this disease, and is spending large amounts publicizing its causes and control, and advocating the liberal use of disinfectants.

The gutters in back of each stall, or stanchion, in the dairy barn are cleaned daily and sprinkled with

chloride of lime or T.S.P. This, according to the veterinarian, will keep the barn free from odors, and assist in killing disease germs that may be present on the floors and in gutters. Manure, and the areas where the manure has been, are sprayed with a chlorine disinfectant solution. Cattle are sprayed with a livestock spray before each milking, and the flanks, udder and teats are washed with a chlorine solution. The veterinarian said that most of the farmers purchase their own cattle sprays locally. While a large number of large milk distributors are at present buying alkali cleansers and disinfectants for the farmers who supply their milk, as an accommodation and paid for in milk, very few are offering the same service by supplying insecticides. Some, however, are planning to establish such a service for their farmers, in the near future, it was learned. Indeed, it was for this purpose that the purchasing agent of one large milk company in New York recently requested a copy of the N.A.D.I.M. specifications.

During the course of the interview with the veterinarian, he produced a bulletin recently published by the U. S. Dept. of Agriculture, giving dairy farmers instructions on how to prepare their own insecticides, which should be of interest. The directions given are as follows: "Put five pounds of unground, half-closed pyrethrum flowers in a double thickness cheese-cloth container. Suspend this for 24 hours in a mixture of nine gallons of kerosene and four quarts of fuel oil of 28-32° gravity." The bulletin adds that "for the sake of convenience, a concentrated pyrethrum extract is being marketed by insecticide manufacturers which needs only the addition of kerosene and fuel oil to be ready for use." For spraying, the bulletin suggests that "a sprayer of good size should be used, capable of 35 to 40 pounds pressure." The bulletin also advises the farmer that when spraying cattle, "it is best not to spray directly into the cow's hair, but parallel to the animal, so as to hit the flies as they rise." (How would you like fuel oil in *your* m i l k ? Insecticide manufacturers please note these are not *our* ideas.—Editor.)

Utensils used in handling milk are constructed of Monel metal or other non-corrodible, smooth metal, free of open seams, rust, rough solder or wooden handles. The method of cleaning utensils and milking machines is uniformly followed on all dairy farms. Most of milk distributing concerns maintain a staff of veterinarians who act as "service men" to dairy farmers, supervising this phase of cleanliness in addition to caring for the cattle. According to recommendations of these service men, utensils and milking machines are first rinsed with cold water immediately after being used, then washed in an alkali solution (usually T.S.P.) and rinsed and scalded with water at or as near the boiling point as possible, and then are washed in a chlorine solution, remaining in the

solution for two minutes at least. Distributors supply dairymen with a 15 per cent chlorine disinfectant for this purpose.

The U. S. Dept. of Agriculture, in another bulletin, suggests that farmers might want to prepare their own solution, and gives the following directions: "To make a solution of calcium hypochlorite, first make a smooth, watery paste of 12 ounces of chloride of lime, add water until the solution amounts to 2 gallons. Strain into a bottle or jar and keep tightly covered. To dilute this stock solution to proper strength for using, add water at the rate of 8 gallons per pint. A strength of one part of chlorine to 5,000 parts of water is desirable."

AFTER milk leaves the dairy farms and is transported to large bottling and milk product manufacturing plants, the sanitation and cleanliness problems increase due to the greater handling necessary and the larger volume of milk concentrated at one point. Purchasing agents for a number of dairy plants were interviewed for information about the kinds and quantities of sanitary chemicals which they use. Actual yearly consumption figures for two of the largest plants were obtained. However, before discussing them it will be of interest to turn to the Sanitary Code of New York City relating to milk and milk products and see what the Board of Health has to say about requirements and preparation of detergents and disinfectants used in the handling of milk. This is what is said about methods of cleaning utensils, etc.:

Regulation 43. Methods of cleaning utensils, apparatus, etc. All containers, receptacles, strainers, apparatus and other utensils used in the handling or transportation of milk or cream must be rinsed with clean water after being used, scrubbed with brushes and an alkaline solution and then with boiling water or steam, and all tank cars, storage tanks, tank trucks, bottles and cans used in the storage, handling or transportation of milk or cream may be cleansed by such other method of sterilization as may be specified and approved by the Commissioner of Health, and so stored and kept as to be free from contamination until again used.

Here is what the New York Sanitary Code says about the cleansing of milk bottles:

Regulation 126b. Cleansing bottles. (1) When the soaker type of washer is employed, bottles which are designed and intended to hold milk or milk products shall be washed by filling and completely submerging them in a solution of caustic alkali (sodium hydroxide of not less than two per cent concentration) or an equally efficient and approved detergent and sterilizing agent for a period of not less than seven minutes, during which period such solution shall be maintained at a temperature of not less than 150° F. While in contact with this detergent and sterilizing agent, such bottles shall either be thoroughly brushed or properly sprayed or subject to air water pressure spray of suitable type. Such bottles shall then be rinsed with clean water and sterilized as provided in these regulations.

(2) Wherein such bottles are cleansed by hand or such device other than the soaker type of washer, bottles must be soaked in or sprayed with water of temperature of not less than 120° F. containing an alkali or other approved detergent. These bottles shall then be cleansed by means of friction with brush, or with water and air pressure apparatus of suitable type, using an effective washing compound in concentration sufficient for the removal of dirt and grease detectable by sight or touch, followed by a rinse to remove all traces of such washing compound. Such bottles shall then be rinsed with clean water and sterilized as provided in these regulations.

Regulation 126c. Sterilization of apparatus, containers, etc. Sterilization of all apparatus, including tanks, vats, coolers, filters, separators, pumps, pipes, pasteurizing apparatus, bottles and other containers, shall be performed as follows:

(a) Exposure of all surfaces to live steam, under pressure, for not less than two minutes.

(b) Exposure of all surfaces to water of temperature not less than 180° F., for a period of two minutes or longer.

(c) Application to surfaces of a chlorine solution, of strength herein indicated for the period of time specified.

(d) Strengths of solutions and time of exposure required for chlorine sterilization. For tanks, including those mounted on railroad and automobile trucks, wherein chlorine sterilization solution is applied by spraying, 250 parts of available chlorine by weight per 1,000,000 parts of water after application for not less than five minutes. For containers, apparatus and utensils, other than tanks and bottles, wherein chlorine sterilization solution is pumped or allowed to flow over surfaces to be sterilized, and its contact therewith is continuous, at least 100 parts per 1,000,000, in solution after application for not less than two minutes. For bottles, (a) if washed by hand or in pressure type washers, at least 50 parts per 1,000,000 for not less than 15 seconds; (b) if previously cleaned and sterilized in a soaker type washer, at least 10 parts per 1,000,000 in solution, after application for not less than 10 seconds.

Regulation 126d. Preparation of chlorine solution. Vessels or containers used for preparation, or storage of chlorine solutions shall not be constructed of wood, metal or other substance readily affected by such solution. Chlorine solutions shall be

ARE THEATRES SANITARY?

The theatres of the country as a market for sanitary chemicals, — this subject is being investigated and will be discussed in the next issue of SOAP,—their problems of insects, odors, cleanliness, and the products which they buy to solve them. In July issue of SOAP!

prepared by dissolving in water, sufficient liquid chlorine, calcium or sodium hypochlorite, or similar compound, to give at all times the content of available chlorine herein prescribed, as indicated by the orthotolidine test of starchiodide titration. Equipment and materials for the performance of the orthotolidine test or starchiodide titration shall be constantly available and used regularly. Re-use of chlorine solution:—A chlorine solution shall not be used more than once in the sterilization of containers, apparatus or utensils used in the handling, storage or transportation of milk or milk products, except where the strength of available chlorine is maintained, as outlined above, but such used or spent chlorine solution may be employed for treating floors, walls or other structural parts.

AMONG the buyers of sanitary chemicals interviewed was the purchasing agent for the largest co-operative association of milk producers in the New York milkshed, — a very progressive organization. This organization is made up of 37,500 active producers. In 1936 it produced 2,376,312,175 pounds of milk and did a net business of $55,000,000. The agent said he had no objections to giving any information that would be helpful regarding his purchases, but requested that the name of his organization be withheld in connection with consumption figures for fear some of his present suppliers would see them and get the notion that they were not receiving a large enough percentage of his business. He said that he made it his policy to distribute his purchases over a large number of suppliers so as not to show partiality.

A complete list of his purchases of sanitary chemicals for 1937 is as follows: 400,000 pounds of a cleanser composed about 50 per cent of trisodium phosphate and 50 per cent soda ash, used in washing utensils; 225,000 pounds of a cleanser, about 80 per cent caustic soda and 20 per cent trisodium phosphate, for washing apparatus; 185,000 pounds of a cleanser, about 75 per cent caustic soda and 25 per cent soda ash, used for washing machinery; 50,000 pounds of a cleaner of 58 per cent light soda ash, and 50,000 pounds of a trisodium product, both used for general cleaning, such as walls, ceilings and floors of bottling plants; 30,000 pounds of an abrasive detergent, used on stainless steel; 30,000 pounds of straight caustic soda for cleaning bottles; 2,500 pounds of a nickel cleanser; 20,000 pounds of casein remover, containing soda ash, trisodium phosphate and sodium silicate; and 70,000 pounds of sterilizer, about 97 per cent trisodium phosphate and three per cent sodium hypochlorite.

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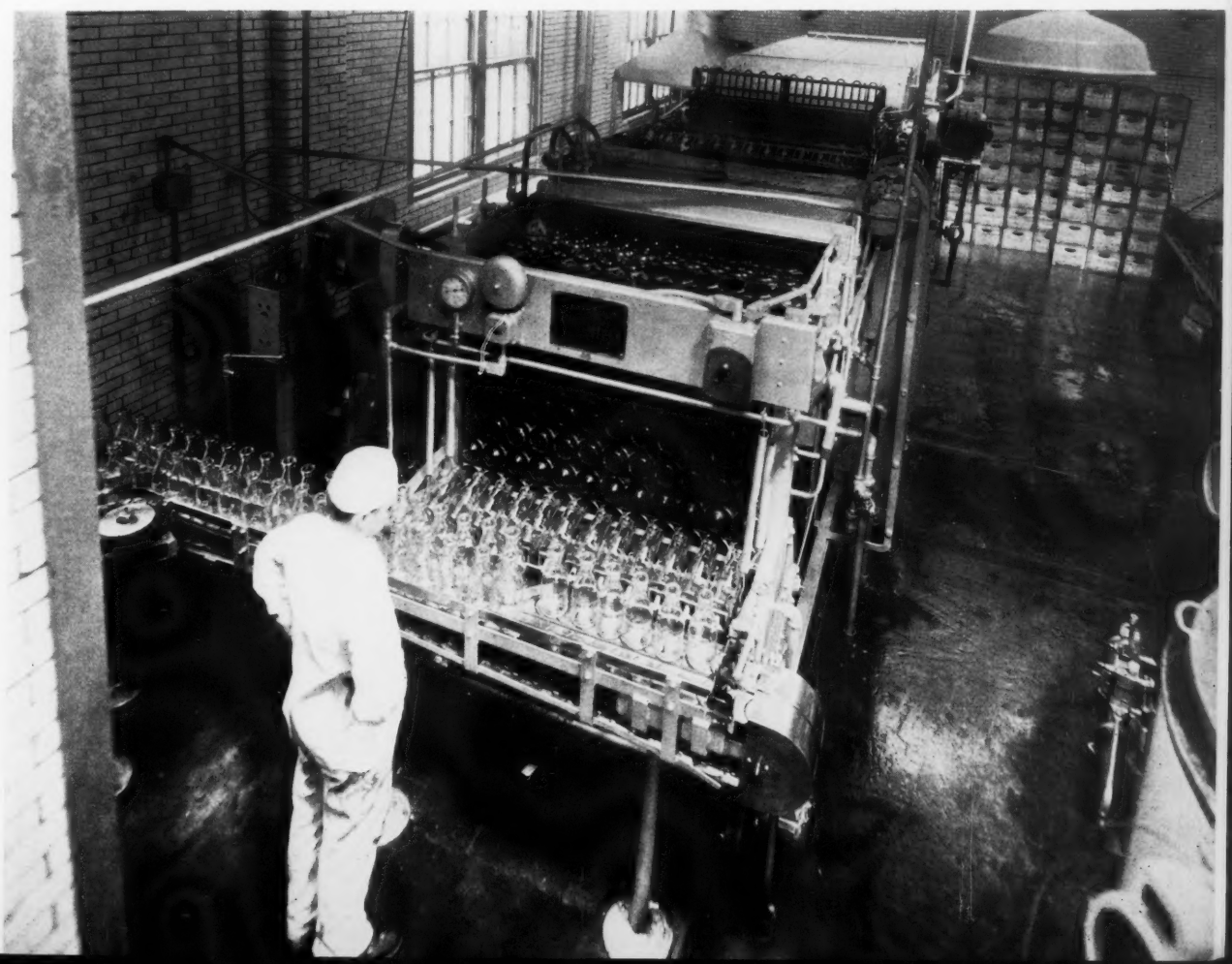

Automatic bottle washing and sterilizing equipment used in a large milk plant.

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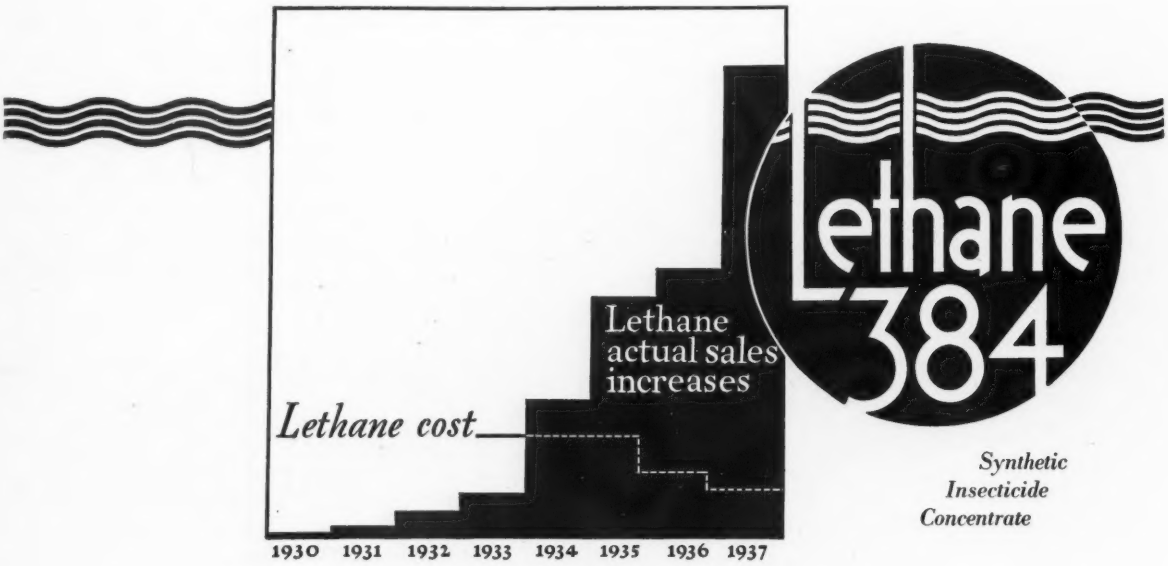


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# ROACHES

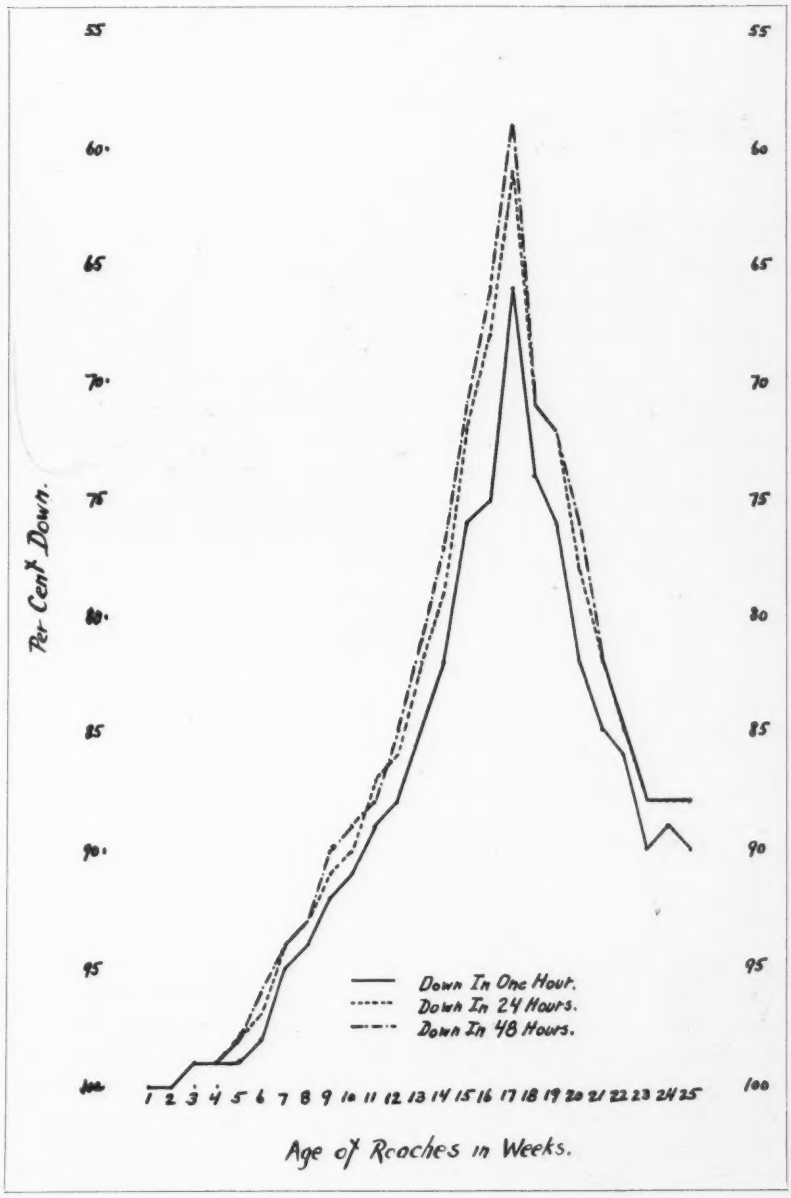
## A study of the relationship between the ages of cockroaches and their resistance to liquid insecticides

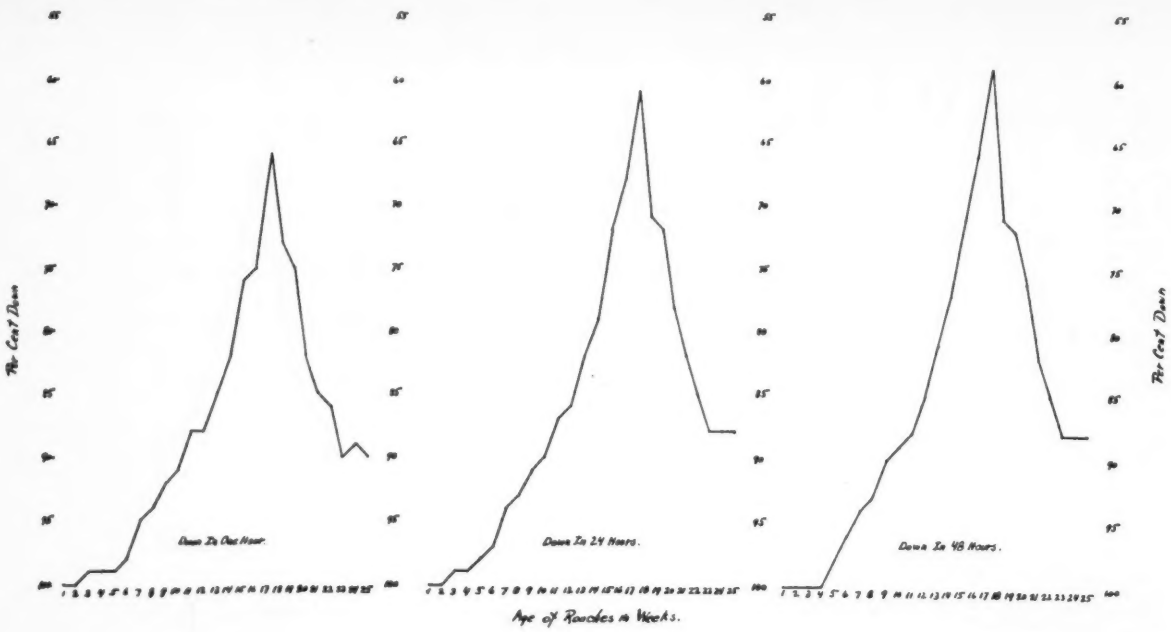
By Vladimir Tuma

THE purpose of these studies was to determine the age of roaches at which they are most resistant to the action of liquid insecticides and to determine to what extent standardized "kill" tests with roaches of this most resistant age agree or disagree with identical tests using, however, roaches of mixed ages.

*Breeding:* The German cockroach (Blatella germanica) was used exclusively in these studies. Throughout this paper the word "roach" is intended to indicate this particular species.

The roaches were bred in standard four-quart glass specimen jars. Each jar was provided with a one-inch layer of coarse sawdust packed down hard. A single thickness of fine cheesecloth, tied around the neck of the jar with a cord, served as a cover. To prevent the loss of roaches during feeding and other manipulations, a one-inch ring of petrolatum was smeared around the inside of the jar near the top. Cones of stiff, dull, black paper, two inches tall and with a diameter of one inch at the base, were used for approximately every 200 roaches in the breeding jars. These cones, provided with a small slot at the bottom to permit the roaches to enter easily, served not only as retreats for them but also provided a satisfactory means of transferring entire colonies to the various experimental jars. By maintaining the size of the cones within






the specified dimensions, it was possible to control the number of roaches per cone to a marked degree.

Fresh food was provided in the breeding jars daily, great care being taken to remove all traces of any old food to prevent the formation of mold. In addition to the food, fresh water was supplied in shallow and easily accessible dishes, or in deeper containers filled with washed sea sand. In either case it was important to maintain the depth of the water at a minimum to prevent accidental drowning of the roaches and a resultant contamination of the water.

The food chosen was selected after an extensive study of the reactions of the roaches to various types of food. Synthetic foods studied by other investigators were considered, but of these none seemed as satisfactory as carefully selected and prepared natural foods. In the preliminary breeding experiments, the roaches showed a decided preference to certain natural foods when both natural and synthetic foods were available. The foods finally chosen as a result of the preliminary feeding studies consisted chiefly of boiled potatoes, boiled carrots, candied sweet potatoes, boiled egg noodles, boiled meats, broiled fish, fresh apples and bananas, and some sweets such as fig newtons and molasses cookies. The foods were prepared in the same manner as they would be for human consumption, using the usual amounts of salt and sweet butter but avoiding all traces of spices.

In preparing the food for the breeding jars, it was found preferable to chop the cold foods finely and to use several such foods at the same time. When several foods were used, they were chopped together to form an intimate mixture. Rotation of food to prevent duplication on any two consecutive days was found to be highly desirable. The roaches showed a definite tendency to tire of a constant repetition of any one food.

For the purposes of these studies two distinct types of colonies were bred. In the one type no effort was made to separate the roaches according to their age. The colonies were allowed to propagate naturally and when a sufficient number of roaches were available for the kill tests, they were merely transferred as needed. These colonies thus contained roaches of all ages and were termed "Mixed-age Colonies." In the other type of colonies, however, greater care was required in separating the egg-bearing females. As soon as their eggs were dropped, the females were removed, the newly-born roaches thus constituting a colony whose age was definitely known at all times. These colonies were termed "Controlled-age Colonies."

In both the "Mixed-age Colonies" as well as the "Controlled-age Colonies" overcrowding in the breeding jars was avoided at all times, efforts being made to maintain the number of roaches in the breeding jars between 800 and 1000. The temperature in the breeding room was maintained at a minimum of 85° F. at all times while the relative humidity was maintained at a minimum of 65 per cent.

*Experimental Work:* In conducting the "kill tests," the roaches were transferred to a standard 16-quart glass specimen jar, termed the "death chamber." The bottom of this jar, as well as approximately one-half of the cylindrical wall, were covered with a single thickness of filter paper, and a one-half ring of petrolatum was smeared around the inside of the jar near the top. The transfer was made merely by lifting one of the cones from the breeding jars and placing

TABLE I

(Roaches of controlled age—averaging 50 per test)

| Age of Roaches | Number of Roaches Used | Number Down In One hr. | Per Cent Down In One Hr. | Number Down In 24 hrs. | Per Cent Down In 24 hrs. | Number Down In 48 hrs. | Per Cent Down In 48 hrs. |
|---|---|---|---|---|---|---|---|
| 1 week | 46 | 46 | 100% | 46 | 100% | 46 | 100% |
| 2 " | 51 | 51 | 100% | 51 | 100% | 51 | 100% |
| 3 " | 48 | 47 | 98% | 47 | 98% | 47 | 98% |
| 4 " | 47 | 47 | 100% | 47 | 100% | 47 | 100% |
| 5 " | 53 | 52 | 98% | 51 | 96% | 51 | 96% |
| 6 " | 50 | 48 | 96% | 47 | 94% | 47 | 94% |
| 7 " | 48 | 45 | 94% | 44 | 92% | 44 | 92% |
| 8 " | 49 | 45 | 92% | 45 | 92% | 45 | 92% |
| 9 " | 54 | 49 | 91% | 47 | 87% | 46 | 85% |
| 10 " | 50 | 45 | 90% | 44 | 88% | 44 | 88% |
| 11 " | 50 | 44 | 88% | 43 | 86% | 43 | 86% |
| 12 " | 48 | 42 | 88% | 41 | 86% | 41 | 86% |
| 13 " | 45 | 38 | 85% | 38 | 85% | 38 | 85% |
| 14 " | 50 | 41 | 82% | 40 | 80% | 39 | 78% |
| 15 " | 51 | 38 | 75% | 36 | 71% | 36 | 71% |
| 16 " | 48 | 37 | 77% | 33 | 69% | 32 | 67% |
| 17 " | 52 | 33 | 64% | 31 | 60% | 30 | 58% |
| 18 " | 50 | 38 | 76% | 37 | 75% | 37 | 74% |
| 19 " | 48 | 37 | 77% | 36 | 75% | 36 | 75% |
| 20 " | 53 | 44 | 83% | 42 | 79% | 40 | 76% |
| 21 " | 50 | 43 | 86% | 43 | 86% | 43 | 86% |
| 22 " | 51 | 44 | 86% | 44 | 86% | 44 | 86% |
| 23 " | 46 | 41 | 89% | 40 | 87% | 39 | 85% |
| 24 " | 49 | 45 | 92% | 43 | 88% | 43 | 88% |
| 25 " | 53 | 48 | 91% | 46 | 87% | 46 | 87% |
| TOTAL | 1,240 | | | | | | |
| AVERAGE | 50 | | | | | | |

2188 / 25 = 87.9

it in an inverted position into a metal rack located on the bottom of the death chamber at its center. No food or water was provided.

The top of the death chamber was temporarily covered with a wooden board to prevent all but a minimum loss of the mist of liquid insecticide during the test. Then exactly two cubic centimeters of the liquid insecticide were atomized into the death chamber under a pressure of fifteen pounds, using a De Vilbiss Atomizer No. 5004. The nozzle of the atomizer, inserted under the board, was directed toward the top of the death chamber and against that portion of the wall protected with filter paper. The wooden board was removed immediately after the insecticide had thus been atomized, and the death chamber was then covered with four thicknesses of fine cheesecloth. The cheesecloth was substituted for the wooden board to permit a slow equalization of the pressure within the death chamber with the atmospheric pressure.

At the end of one hour, the dead and moribund roaches were counted and were reported as "Roaches Down in Hour." After counting, all the dead and moribund roaches as well as those apparently not affected were removed from the death chamber and were tansferred to a "Recovery Chamber." At the end of 24 hours, the dead and moribund roaches were again counted and were reported as "Roaches Down in 24 Hours." Finally, at the end of 48 hours, the dead and moribund roaches were again counted and were reported as "Roaches Down in 48 Hours."

The recovery chamber consisted of a standard four-quart glass specimen jar. A single thickness of filter paper was placed on the bottom of the jar and a one-inch ring of petrolatum was smeared around the inside near the top. Fresh food and water were placed in the recovery chamber daily throughout the course of the test. A single thickness of cheesecloth was used as a cover.

Prior to establishing the 48-hour period as the maximum observation period, extensive experiments were conducted over observation periods of 72 hours and 96 hours. The results of these experiments indicated that only in rare cases was there any additional recovery to be observed.

It is evident that the data obtained as a result of the described experiments provided a basis for reporting the "Roaches Down" and the extent of recovery. While the figures also included the moribund roaches, this method of reporting the test results was adopted.

It should be noted that, with only one exception, the possible variables occurring were rigidly controlled to produce a standard and at all times reproducible method of testing. The volume and diameter of the death chamber were kept constant; the volume of the liquid insecticide used was kept constant; the diameter of the orifice of the atomizing nozzle was kept constant; the observation periods were kept constant. The only

TABLE II

(Roaches of controlled age—averaging 102 per test)

| Age of Roaches | Number of Roaches Used | Number Down In One hr. | Per Cent Down In One hr. | Number Down In 24 hrs. | Per Cent Down In 24 hrs. | Number Down In 48 hrs. | Per Cent Down In 48 hrs. |
|---|---|---|---|---|---|---|---|
| 1 week | 96 | 96 | 100% | 96 | 100% | 96 | 100% |
| 2 weeks | 106 | 106 | 100% | 106 | 100% | 106 | 100% |
| 3 " | 105 | 105 | 100% | 104 | 99% | 105 | 100% |
| 4 " | 94 | 93 | 99% | 93 | 99% | 94 | 100% |
| 5 " | 99 | 99 | 100% | 97 | 98% | 97 | 98% |
| 6 " | 110 | 109 | 99% | 109 | 99% | 108 | 98% |
| 7 " | 108 | 103 | 95% | 101 | 94% | 101 | 94% |
| 8 " | 97 | 90 | 93% | 90 | 93% | 90 | 93% |
| 9 " | 108 | 100 | 93% | 100 | 93% | 100 | 93% |
| 10 " | 97 | 87 | 90% | 86 | 89% | 85 | 88% |
| 11 " | 100 | 90 | 90% | 90 | 90% | 90 | 90% |
| 12 " | 108 | 95 | 88% | 93 | 86% | 91 | 84% |
| 13 " | 101 | 86 | 85% | 83 | 82% | 81 | 80% |
| 14 " | 95 | 76 | 80% | 71 | 75% | 70 | 74% |
| 15 " | 106 | 78 | 74% | 72 | 68% | 72 | 68% |
| 16 " | 109 | 82 | 75% | 75 | 69% | 73 | 67% |
| 17 " | 94 | 63 | 67% | 56 | 60% | 54 | 58% |
| 18 " | 107 | 78 | 73% | 75 | 70% | 76 | 71% |
| 19 " | 96 | 68 | 71% | 65 | 68% | 64 | 67% |
| 20 " | 98 | 77 | 79% | 75 | 77% | 74 | 76% |
| 21 " | 104 | 86 | 83% | 83 | 80% | 83 | 80% |
| 22 " | 102 | 87 | 85% | 87 | 85% | 88 | 86% |
| 23 " | 97 | 88 | 91% | 86 | 89% | 86 | 89% |
| 24 " | 112 | 100 | 89% | 100 | 89% | 102 | 91% |
| 25 " | 103 | 93 | 90% | 91 | 88% | 91 | 88% |
| TOTAL | 2,552 | | | | | | |
| AVERAGE | 102 | | | | | | |

2189 / 25 = 87.6

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TABLE III

(Roaches of controlled age--averaging 153 per test)

| Age of Roaches | Number of Roaches Used | Number Down In One hr. | Per Cent Down In One hr. | Number Down In 24 hrs. | Per Cent Down In 24 hrs. | Number Down In 48 hrs. | Per Cent Down In 48 hrs. |
|---|---|---|---|---|---|---|---|
| 1 week | 143 | 143 | 100% | 143 | 100% | 143 | 100% |
| 2 weeks | 160 | 160 | 100% | 160 | 100% | 160 | 100% |
| 3 " | 155 | 153 | 99% | 155 | 100% | 155 | 100% |
| 4 " | 151 | 150 | 99% | 151 | 100% | 151 | 100% |
| 5 " | 158 | 158 | 100% | 157 | 99% | 157 | 99% |
| 6 " | 146 | 144 | 99% | 142 | 97% | 141 | 97% |
| 7 " | 149 | 146 | 98% | 145 | 97% | 145 | 97% |
| 8 " | 156 | 151 | 97% | 148 | 95% | 146 | 94% |
| 9 " | 146 | 139 | 95% | 136 | 93% | 136 | 93% |
| 10 " | 161 | 151 | 94% | 148 | 92% | 147 | 91% |
| 11 " | 149 | 134 | 90% | 130 | 87% | 130 | 87% |
| 12 " | 152 | 135 | 89% | 130 | 86% | 128 | 84% |
| 13 " | 150 | 131 | 87% | 128 | 85% | 127 | 85% |
| 14 " | 159 | 132 | 83% | 125 | 79% | 123 | 77% |
| 15 " | 161 | 126 | 78% | 118 | 73% | 118 | 73% |
| 16 " | 147 | 110 | 75% | 98 | 67% | 96 | 65% |
| 17 " | 155 | 101 | 65% | 92 | 59% | 89 | 57% |
| 18 " | 154 | 116 | 75% | 111 | 72% | 111 | 72% |
| 19 " | 143 | 109 | 76% | 104 | 73% | 106 | 74% |
| 20 " | 149 | 122 | 82% | 119 | 80% | 118 | 79% |
| 21 " | 153 | 142 | 87% | 139 | 85% | 139 | 85% |
| 22 " | 158 | 135 | 85% | 132 | 84% | 132 | 84% |
| 23 " | 162 | 144 | 89% | 146 | 90% | 149 | 92% |
| 24 " | 155 | 137 | 88% | 135 | 87% | 135 | 87% |
| 25 " | 146 | 131 | 90% | 129 | 88% | 128 | 88% |
| TOTAL | 3,828 | | | | | | |
| AVERAGE | 153 | | | | | | |

$\frac{2220}{25} = 88.8\%$

variable which was altered was the number of roaches used for the individual tests. Subsequent experimental work indicated that within certain limits a reasonable variation in the number of roaches used for the test did not materially alter the final results.

This investigation was undertaken with two liquid insecticides:—one containing an aliphatic thiocyanate corresponding to a content of 0.187 per cent thiocyanoacetic acid, and the other consisting of 0.03 per cent pyrethins. Insecticides diluted to this strength were found to be desirable for an accurate study of the general trends of resistance of the roaches in relation to their age.

*Results of Experimental Work:* The results of the experiments are given in the appended tables and graphs. The first five tables give the results of work with various numbers of roaches being used for each test. Thus these experiments also showed the effect of changing the one remaining variable within certain limits.

Tables I to V are given in detail, as a close study brought out a few minor irregularities which could only be accounted for by the fact that even under the most rigid care in breeding, unknown diseases or other factors of environment definitely affected the strength of the roaches used for the tests. These irregularities, however, were not sufficiently large to materially alter the final results when the averages of a reasonable number of tests were used.

These data also showed that there was a definite recovery once the roaches were transferred to the recovery chamber away from the influence of the insecticide other than that which may have been taken into their system or may have remained impinged on the insects themselves. This, of course, duplicated to a large extent the condition in actual usage where roaches subjected to treatment may crawl away to spots not affected by the treatment.

For purposes of further study composite Table VI serves as a better basis. The figures in this table represent the averages of the percentages of "Down in One Hour," "Down in 24 Hours," and "Down in 48 Hours" previously reported in detail in Tables I to V.

The relationship between the age of the roaches and their resistance

TABLE VI

| Age of Roaches | Per Cent Down In One Hr. | Per Cent Down In 24 Hrs. | Per Cent Down In 48 Hrs. |
|---|---|---|---|
| 1 week | 100% | 100% | 100% |
| 2 weeks | 100% | 100% | 100% |
| 3 " | 99% | 99% | 100% |
| 4 " | 99% | 99% | 100% |
| 5 " | 99% | 98% | 98% |
| 6 " | 98% | 97% | 96% |
| 7 " | 95% | 94% | 94% |
| 8 " | 94% | 93% | 93% |
| 9 " | 92% | 91% | 90% |
| 10 " | 91% | 90% | 89% |
| 11 " | 88% | 87% | 88% |
| 12 " | 88% | 86% | 85% |
| 13 " | 85% | 82% | 81% |
| 14 " | 82% | 79% | 77% |
| 15 " | 76% | 72% | 71% |
| 16 " | 75% | 68% | 66% |
| 17 " | 66% | 61% | 59% |
| 18 " | 74% | 71% | 71% |
| 19 " | 76% | 72% | 72% |
| 20 " | 82% | 78% | 76% |
| 21 " | 85% | 82% | 82% |
| 22 " | 86% | 85% | 85% |
| 23 " | 90% | 88% | 88% |
| 24 " | 89% | 88% | 88% |
| 25 " | 90% | 88% | 88% |

TABLE IV

(Roaches of controlled age--averaging 202 per test)

| Age of Roaches | Number of Roaches Used | Number Down In One hr. | Per Cent Down In One hr. | Number Down In 24 hrs. | Per Cent Down In 24 hrs. | Number Down In 48 hrs. | Per Cent Down In 48 hrs. |
|---|---|---|---|---|---|---|---|
| 1 week | 190 | 190 | 100% | 190 | 100% | 190 | 100% |
| 2 weeks | 215 | 213 | 99% | 215 | 100% | 215 | 100% |
| 3 " | 206 | 206 | 100% | 206 | 100% | 206 | 100% |
| 4 " | 210 | 208 | 99% | 206 | 98% | 208 | 99% |
| 5 " | 196 | 196 | 100% | 196 | 100% | 195 | 99% |
| 6 " | 198 | 194 | 98% | 192 | 97% | 190 | 96% |
| 7 " | 207 | 193 | 93% | 189 | 91% | 189 | 91% |
| 8 " | 203 | 189 | 93% | 187 | 92% | 187 | 92% |
| 9 " | 195 | 176 | 90% | 176 | 90% | 173 | 89% |
| 10 " | 211 | 192 | 91% | 194 | 92% | 190 | 90% |
| 11 " | 196 | 169 | 86% | 165 | 84% | 165 | 84% |
| 12 " | 201 | 177 | 88% | 172 | 86% | 177 | 88% |
| 13 " | 202 | 169 | 84% | 160 | 79% | 157 | 78% |
| 14 " | 193 | 160 | 83% | 156 | 81% | 150 | 78% |
| 15 " | 212 | 168 | 79% | 159 | 75% | 153 | 72% |
| 16 " | 197 | 143 | 75% | 136 | 69% | 131 | 67% |
| 17 " | 194 | 130 | 67% | 125 | 65% | 125 | 65% |
| 18 " | 213 | 158 | 74% | 151 | 71% | 152 | 71% |
| 19 " | 207 | 162 | 78% | 157 | 76% | 157 | 76% |
| 20 " | 193 | 162 | 84% | 156 | 81% | 153 | 79% |
| 21 " | 195 | 164 | 84% | 161 | 83% | 156 | 80% |
| 22 " | 195 | 172 | 88% | 170 | 87% | 170 | 87% |
| 23 " | 209 | 190 | 91% | 185 | 89% | 187 | 89% |
| 24 " | 212 | 189 | 89% | 187 | 88% | 185 | 88% |
| 25 " | 199 | 179 | 90% | 179 | 90% | 179 | 90% |
| TOTAL | 5,049 | | | | | | |
| AVERAGE | 202 | | | | | | |

$\frac{2205}{25} = 88.2\%$

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TABLE V

(Roaches of controlled age--averaging 253 per test)

| Age of Roaches | Number of Roaches Used | Number Down In One hr. | Per Cent Down In One hr. | Number Down In 24 hrs. | Per Cent Down In 24 hrs. | Number Down In 48 hrs. | Per Cent Down In 48 hrs. |
|---|---|---|---|---|---|---|---|
| 1 week | 267 | 267 | 100% | 267 | 100% | 267 | 100% |
| 2 weeks | 249 | 249 | 100% | 249 | 100% | 249 | 100% |
| 3 " | 256 | 256 | 100% | 256 | 100% | 256 | 100% |
| 4 " | 251 | 248 | 99% | 251 | 100% | 251 | 100% |
| 5 " | 264 | 261 | 99% | 260 | 99% | 264 | 100% |
| 6 " | 254 | 249 | 98% | 247 | 97% | 247 | 97% |
| 7 " | 258 | 246 | 95% | 250 | 97% | 248 | 96% |
| 8 " | 243 | 233 | 96% | 229 | 94% | 229 | 94% |
| 9 " | 265 | 246 | 93% | 238 | 90% | 241 | 91% |
| 10 " | 251 | 226 | 90% | 220 | 88% | 224 | 89% |
| 11 " | 257 | 224 | 87% | 222 | 87% | 222 | 87% |
| 12 " | 243 | 213 | 88% | 211 | 85% | 207 | 84% |
| 13 " | 261 | 219 | 84% | 210 | 81% | 206 | 79% |
| 14 " | 239 | 194 | 81% | 186 | 78% | 186 | 78% |
| 15 " | 252 | 191 | 76% | 183 | 73% | 178 | 71% |
| 16 " | 247 | 180 | 73% | 163 | 66% | 157 | 64% |
| 17 " | 263 | 171 | 65% | 161 | 61% | 153 | 58% |
| 18 " | 243 | 180 | 74% | 164 | 68% | 161 | 66% |
| 19 " | 260 | 198 | 76% | 179 | 69% | 175 | 67% |
| 20 " | 245 | 196 | 80% | 178 | 73% | 176 | 72% |
| 21 " | 247 | 208 | 84% | 190 | 77% | 190 | 77% |
| 22 " | 264 | 230 | 87% | 219 | 83% | 221 | 84% |
| 23 " | 252 | 227 | 90% | 219 | 87% | 218 | 87% |
| 24 " | 257 | 229 | 89% | 228 | 89% | 225 | 88% |
| 25 " | 241 | 217 | 90% | 212 | 88% | 212 | 88% |
| TOTAL | 6,334 | | | | | | |
| AVERAGE | 253 | | | | | | |

is shown to far greater advantage in the two graphs. In the first of these graphs the per cent of "Down" for each of the three observation periods was plotted against the age of roaches in weeks. In the second graph, these three curves were merely superimposed upon each other. While this graph is not very clear because of the superimposed lines, it is included to show the close agreement between the three curves shown separately.

A study of these tables and graphs discloses interesting information. Primarily, the data indicate that roaches exhibit their greatest resistance at an age of 17 weeks. It is also shown that within the range of the average number of roaches used for these tests, the number taken has very little effect upon the ultimate results. Hence it is indicated that the one variable left more or less uncontrolled may vary within reasonable limits without materially affecting the final results. Additional experimental work was undertaken with larger groups of roaches of controlled age but the resultant data indicated that under these conditions the test results were not reliable.

The fact that 17-week old roaches are the most resistant leads to the conclusion that roaches of this particular age should be used for accurate test conditions. Analogous conclusions have led to the adoption of four-day old flies for testing by the Peet-Grady method. While there is no doubt that for critical tests 17-week old roaches should be used, further experimental work was nevertheless undertaken to determine just what relationship may exist between tests using 17-week old roaches and tests conducted under identical conditions but using roaches of mixed ages. Series of tests were conducted with roaches of mixed ages, the results of which tests are given in Tables VII, VIII, IX and X. As in the work with controlled-age colonies, several different sized groups were studied.

A study of these four tables brings out a number of salient points. First, it was quite evident that when the number of roaches used was varied up to an approximate maximum of 300, the difference in test results was negligible. When larger groups of roaches were used, the results were no longer reliable.

Another point brought out was the fact that the results obtained from the tests using roaches of mixed ages were not fully reliable even when a reasonable number of tests were

TABLE VII

(Roaches of mixed age--averaging 105 per test)

| Test Number | Number of Roaches Used | Number Down in 1 hr. | Per Cent Down in 1 hr. | Number Down in 24 hrs. | Per Cent Down in 24 hrs. | Number Down in 48 hrs. | Per Cent Down in 48 hrs. |
|---|---|---|---|---|---|---|---|
| 11 | 96 | 79 | 82% | 74 | 71% | 55 | 57% |
| 12 | 112 | 93 | 83% | 83 | 74% | 69 | 62% |
| 13 | 104 | 86 | 88% | 81 | 78% | 72 | 69% |
| 14 | 107 | 86 | 80% | 74 | 69% | 67 | 63% |
| 15 | 116 | 77 | 89% | 86 | 74% | 70 | 60% |
| 16 | 93 | 77 | 83% | 75 | 77% | 59 | 63% |
| 17 | 107 | 91 | 85% | 85 | 79% | 71 | 66% |
| 18 | 103 | 80 | 79% | 75 | 73% | 73 | 71% |
| 19 | 101 | 81 | 81% | 79 | 78% | 63 | 62% |
| 20 | 114 | 99 | 87% | 88 | 77% | 70 | 61% |
| TOTALS | 1,053 | | | | | | |
| AVERAGES | 105 | | 84% | | 75% | | 63% |
| M.D.A. | 11% | | 6% | | 5% | | 13% |

TABLE VIII

(Roaches of mixed age--averaging 205 per test)

| Test Number | Number of Roaches Used | Number Down in 1 hr. | Per Cent Down in 1 hr. | Number Down in 24 hrs. | Per Cent Down in 24 hrs. | Number Down in 48 hrs. | Per Cent Down in 48 hrs. |
|---|---|---|---|---|---|---|---|
| 1 | 210 | 175 | 83% | 158 | 75% | 138 | 66% |
| 2 | 196 | 157 | 80% | 155 | 79% | 118 | 60% |
| 3 | 203 | 175 | 86% | 146 | 72% | 132 | 65% |
| 4 | 197 | 171 | 87% | 150 | 76% | 126 | 64% |
| 5 | 212 | 178 | 84% | 157 | 74% | 144 | 68% |
| 6 | 206 | 167 | 81% | 144 | 70% | 130 | 63% |
| 7 | 186 | 158 | 85% | 147 | 79% | 121 | 65% |
| 8 | 214 | 169 | 79% | 158 | 74% | 133 | 62% |
| 9 | 208 | 171 | 82% | 158 | 76% | 127 | 61% |
| 10 | 214 | 188 | 88% | 156 | 74% | 143 | 67% |
| TOTALS | 2,046 | | | | | | |
| AVERAGES | 205 | | 84% | | 75% | | 64% |
| M.D.A. | 9% | | 6% | | 7% | | 6% |

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TABLE IX

(Roaches of mixed age--averaging 301 per test)

| Test Number | Number of Roaches Used | Number Down in 1 hr. | Per Cent Down in 1 hr. | Number Down in 24 hrs. | Per Cent Down in 24 hrs. | Number Down in 48 hrs. | Per Cent Down in 48 hrs. |
|---|---|---|---|---|---|---|---|
| 21 | 318 | 280 | 88% | 213 | 67% | 178 | 56% |
| 22 | 292 | 251 | 86% | 228 | 78% | 199 | 68% |
| 23 | 320 | 250 | 78% | 256 | 80% | 202 | 63% |
| 24 | 300 | 249 | 83% | 213 | 71% | 177 | 59% |
| 25 | 287 | 233 | 81% | 221 | 77% | 190 | 66% |
| 26 | 298 | 230 | 77% | 218 | 73% | 206 | 69% |
| 27 | 318 | 277 | 87% | 229 | 72% | 216 | 68% |
| 28 | 307 | 264 | 86% | 209 | 68% | 187 | 61% |
| 29 | 291 | 233 | 80% | 221 | 76% | 174 | 60% |
| 30 | 279 | 226 | 81% | 220 | 79% | 182 | 67% |
| TOTALS | 3,010 | | | | | | |
| AVERAGES | 301 | | 83% | | 74% | | 64% |
| M.D.A. | 7% | | 7% | | 9% | | 12% |

TABLE X

(Roaches of mixed age--averaging 412 per test)

| Test Number | Number of Roaches Used | Number Down In 1 hr. | Per Cent Down In 1 hr. | Number Down In 24 hrs | Per Cent Down In 24 hrs. | Number Down In 48 hrs. | Per Cent Down In 48 hrs. |
|---|---|---|---|---|---|---|---|
| 31 | 426 | 332 | 78% | 310 | 73% | 255 | 60% |
| 32 | 440 | 361 | 82% | 299 | 68% | 273 | 62% |
| 33 | 391 | 336 | 86% | 281 | 72% | 262 | 67% |
| 34 | 382 | 289 | 74% | 233 | 61% | 202 | 53% |
| 35 | 451 | 379 | 84% | 320 | 71% | 266 | 59% |
| 36 | 417 | 338 | 81% | 292 | 70% | 262 | 63% |
| 37 | 379 | 282 | 77% | 246 | 65% | 232 | 61% |
| 38 | 431 | 340 | 79% | 336 | 78% | 284 | 66% |
| 39 | 371 | 264 | 71% | 264 | 71% | 219 | 59% |
| 40 | 429 | 378 | 88% | 292 | 68% | 236 | 55% |
| TOTALS | 4,117 | | | | | | |
| AVERAGES | 412 | | 80% | | 70% | | 61% |
| M.D.A. | 10% | | 11% | | 13% | | 13% |

conducted and the averages were reported. This held particularly true of the results of observation after 48 hours. Here occurred the greatest maximum deviation from average (M.D.A.), indicating less agreement between individual test results than in the case of the other two observation periods. Recapitulative Table XI shows this in detail.

On the basis of this work, as well as that with controlled-age colonies, 200 has been chosen as the desirable number of roaches to be used for the tests.

The ultimate conclusions of this portion of the work rest, however, upon the resistance of roaches of mixed ages as compared with the resistance of 17-week old roaches. For a better understanding of this relationship recapitulative Table XII is presented.

On the basis of the conclusions regarding the much closer agreement between individual test results when 17-week old roaches were used, it was safe to assume that for an accurate evaluation of a liquid insecticide the tests using roaches of this age were more accurate. The results obtained with roaches of mixed ages showed a much higher mortality. This, of course, was due to the presence of very young or very old roaches bearing no definite numerical relationship to the total number of roaches in the colony used for the test.

It was also evident that it is impossible to establish any kind of a numerical relationship between the results of the two test methods, as no such relationship exists. It would, therefore, be manifestly impossible to establish a quantitative relationship which could serve in the nature of a correction factor even if it were the desire to convert the results of one test into the terms of the other.

The data submitted are offered as a basis for establishing a standardized method of evaluating the efficiency of liquid insecticides for the control of roaches.

It may be of interest to note that while the data submitted in this paper required the breeding and killing of only some 30,000 roaches, all the preliminary and incidental work required the breeding and killing of more than 2,000,000 roaches over a period of three years.

(*Turn to Page* 151)

TABLE XI

| | Per Cent Down In 1 hr. | M.D.A. | Per Cent Down In 24 hrs. | M.D.A. | Per Cent Down In 48 hrs. | M.D.A. |
|---|---|---|---|---|---|---|
| Table VII | 84% | 6% | 75% | 8% | 63% | 13% |
| Table VIII | 84% | 6% | 75% | 7% | 64% | 6% |
| Table IX | 83% | 7% | 74% | 9% | 64% | 12% |
| AVERAGES | 84% | 6% | 75% | 8% | 64% | 10% |

TABLE XII

| | Age of Roaches | Per Cent Down In 1 hr. | Per Cent Down In 24 hrs. | Per Cent Down In 48 hrs. |
|---|---|---|---|---|
| Table VI | 17 weeks | 66% | | |
| Table VI | 17 " | | 61% | |
| Table VI | 17 " | | | 59% |
| Table XI | Mixed Ages | 84% | 75% | 64% |

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# Testing Fly Sprays

## A metal turntable method for comparative tests of liquid spray contact insecticides

By F. L. Campbell[1] and W. N. Sullivan

*Bur. of Entomology and Plant Quarantine*
*U. S. Dept. Agric., Beltsville, Md.*

TESTS of contact insecticides may be made on insects that are feeding or resting on their natural hosts, or that have been removed from their hosts and placed temporarily in unnatural surroundings. The latter practice is generally followed in replicated laboratory tests, with conditions so arranged that the individuals of each sample of insects shall receive, on the average, the same dose of insecticide. For this purpose it has become customary to spray into an enclosure or chamber in which the insects may distribute themselves or within which they are closely confined in a cage. The Peet-Grady chamber (7) may be cited as the type in which the insects may distribute themselves throughout the whole chamber, and the cylinder of Tattersfield and Morris (9) as the type in which the insects are placed or confined in one spot.

The writers adopted the cylinder type of chamber because it promised to have several advantages over the Peet-Grady chamber for routine tests and special investigations; i. e. lower cost, less space requirement, faster operation, greater uniformity of spray application, and greater adaptability for use with crawling or flying insects, or with water, oils, or other liquids.

As the writers' work has been confined to the testing of toxic substances in mineral oil or synthetic organic solvents against houseflies, the apparatus was at first designed particularly for this purpose, arrangements having been made to allow a settling mist to fall within a cylinder upon flies in a screen-covered Petri dish. The evolution of the apparatus was directed toward increasing the ease and speed of operation. At first one cylinder was used (4), then six cylinders were placed in line, the spray gun being moved from one to another (3), and finally six cylinders were placed on a wooden turntable upon which they could be moved suc-

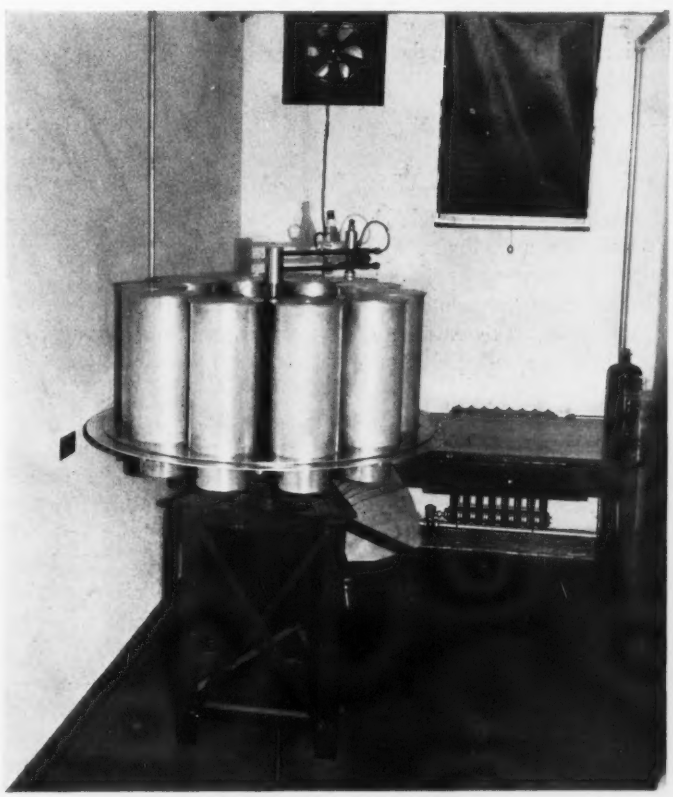


Figure 1. View of metal turntable as seen from door shown in Figure 2

[1] Now associate professor of entomology, Ohio State University.

cessively under a fixed spray gun (5). Although the wooden turntable was satisfactory for its particular purpose, experience with it indicated desirable changes in design and materials that would provide a more rugged, self-contained unit, adaptable to more than one purpose, and requiring less space for the same output of tests. Useful suggestions were also obtained from the work of Zermuehlen and Allen (10).

It is the purpose of this paper to describe the all-metal turntable that has superseded the wooden turntable in the writers' laboratory and to give some data on its performance with kerosene-base insecticides against houseflies. As no mechanical equipment ever arrives at perfection, improvements can be made in the turntable about to be described. The writers' suggestions for improvements, as a result of a year's experience in the operation of the metal turntable, will be given in the present paper, because no further paper on the evolution of this equipment is contemplated by them. A description of recent modifications of handling houseflies for testing insecticides will also be given.

*Description of all-metal turntable:* Figure 1 shows the appearance of the turntable as one enters the room in which it stands. Figure 2 was taken through the window shown in figure 1, and illustrates the other side of the apparatus from the position of the operator, who stands next to the shelf shown in the lower right-hand corner. In figure 1 are seen the triangular frame of angle iron on which the aluminum turntable (46 inches in diameter) is mounted, 10 large aluminum cylinders (17 inches high and 8 inches in diameter) standing upon the turntable, and 10 small cylinders (4 inches deep and 6 inches in diameter) attached to the underside of the turntable below each large cylinder. The small cylinder will hereafter be designated "cage holders." The spray gun and its supporting arm are also visible. In figure 2 one cylinder is removed to show more clearly the arrangement of the air lines to the

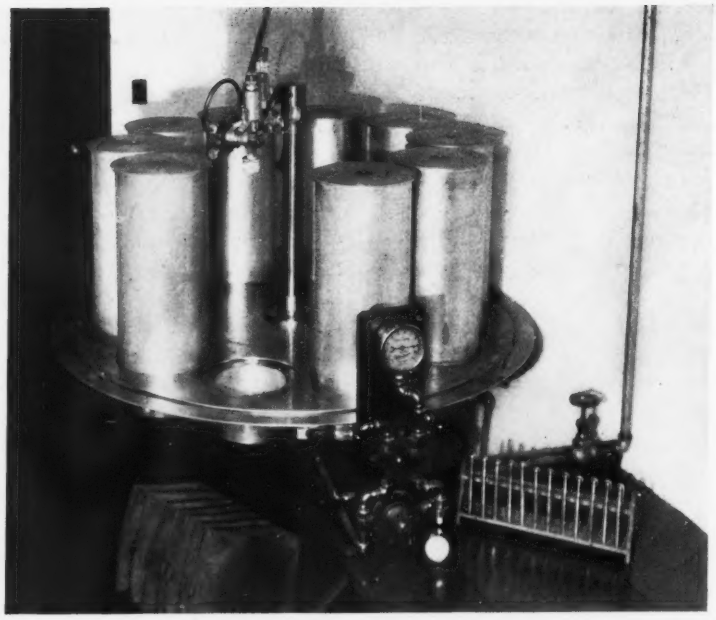


Figure 2. View of metal turntable as seen from window shown in Figure 1

spray gun and the upper opening of a cage holder.

The air is piped first to the valve and gage panel in front of the table, where it is split into two lines, both of which pass through the hand-control valve in the center of the panel. The pressure in one line is reduced and controlled by the reducing valve and recorded on the gage. The pressure in the other line is not reduced, controlled, or recorded. It is only necessary that it should be high enough to operate the valve in the nozzle of the spray gun while the lower controlled pressure atomizes the liquid to be sprayed. The two air pipes from the valve and gage panel may be seen extending under and toward the center of the turntable. One pipe is carried through the center of the ball-bearing assembly and up through the center of the brass pipe seen standing in center of the turntable. The other pipe enters the side of the bearing assembly, and the air from it is carried up in the annular space between the inner and the outer pipes. Two separate air pipes again emerge from the top of the outer pipe and extend horizontally over the turntable. The spray gun is mounted on these pipes, and air is carried to it through bent copper tubing arising from them. A thistle-tube cup is attached to the liquid inlet of the spray gun, and into this cup the liquid to be sprayed is poured. Fused to the thistle tube is a tube and stopcock attached to an Erlenmeyer flask, from which reservoir acetone or other solvent can be run into the gun to clean it between the spraying of different samples.

Close inspection of figure 2 shows that the turntable is composed of two layers, the upper layer of smaller diameter than the lower and separated from it under the cylinders by a one-eighth-inch slot. Into these slots fit the stainless-steel slides shown in the drainage rack below the table in figures 1 and 2. When the slides are in place in the slots, the cylinders rest upon the slides which separate and close the space within the cylinders and the cage holders. When a slide is pulled out from the slot, the cylinder settles upon the rim of the cage holder, thus permitting mist within the cylinder to settle into the cage holder without allowing it to escape to the outside. The cylinders bear removable aluminum covers, each of which has a three-quarter-inch hole in the center. These holes are

never stoppered. The covers are centered and held on the cylinders by three lugs touching the inside wall of the cylinders. A spring ratchet attached to the back of the valve and gage panel engages the end of each supporting fin under the turntable and is so placed as to center the hole of each cover under the nozzle of the spray gun as one cylinder after another is brought under the gun by turning the table. The cage holders are open at the bottom with a narrow flange projecting inward. In the writers' work with fly sprays this opening was closed by an aluminum disc resting on the flange.

Anyone interested in details of construction and dimensions of the equipment just described may obtain blue prints[2] from the Division of Control Investigations, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, Washington, D. C.

*Operation of turntable for testing fly sprays:* A 5½-inch screen-covered Petri dish containing about 100 houseflies is placed on the bottom disc of each of the 10 cage holders. This is done by removing the cylinder from position No. 1 on the turntable, lowering the Petri dish into the cage holder through its open top, covering the cage holder by pushing a slide all the way into the slot above it, and placing the cylinder to the right in position on the slide. This leaves an exposed cage holder at the right, where these operations are repeated. Thus by moving the table from one cage holder to the next, the Petri dishes are placed in position for the tests.

The liquids to be tested are measured out in advance, 5 cc. to a test tube. The tubes are placed in order in a rack by the turntable.

With the first cylinder in place under the spray gun, the operator pours the contents of the first test tube into the thistle tube leading to the gun, opens the hand-control valve, sprays the entire charge of liquid into the cylinder, closes the hand-control valve, and pulls out the slide either immediately after spraying is completed or after some suitable time interval. If the second sample to be tested is not a duplicate of the first, he sprays acetone through the gun to clean and dry it. This is done by bringing the space between two cylinders under the nozzle of the gun and spraying into cotton or cloth. Then the operator brings the second cylinder under the gun by turning the table and repeats the operations, beginning 30 seconds after the start of the first series of operations. Thus at 30-second intervals the operator sprays a sample into each of the 10 cylinders around the table, a total of 5 minutes being required for the 10 applications.

After the flies under the first cylinder have been exposed to the settling mist for 10 minutes, the operator removes the Petri dish containing them from the cage holder and transfers the paralyzed flies to 9½-inch cubical cages. Again he turns the table from one position to the next and removes the flies at 30-second intervals, so that all will have been exposed to the mist for the same period. The treatment of 10 cages of flies from the first spraying to the transfer of the last flies to the observation cage requires about 15 minutes.

If another set of 10 tests is to follow the first, all cylinders and the table are wiped, the room is ventilated, a second set of 10 dishes of flies is brought in, and the cycle is repeated. It was usually convenient to make four sets of tests in close succession, the 40 treatments requiring about 1½ hours. It should be kept in mind that it takes much more time to make preparations for four sets of tests and to count treated flies than it does to perform the operations described above.

*Performance of turntable when used for testing fly sprays:* When a mist of fly spray settles upon insects of a certain susceptibility, the resulting percentage mortality will depend on the chemical and physical properties of the liquid and on the quantity of mist settling upon the flies in a given period of time. The latter factor has a maximum value fixed by the dimensions of the settling chamber. In the present turntable any value below the maximum can be obtained theoretically by suitable combinations of volume of liquid sprayed into a cylinder, spraying pressure, valve settings on the spray gun, and period of exposure of the flies as controlled by the manipulation of the slide over the cage holder. It is not practicable, however, to control the quantity of mist in the air of a cylinder by altering the volume of liquid sprayed into it, because the volume of liquid necessary partially to fill or just to saturate the air of a cylinder is too small to be easily measured and sprayed. Therefore, it seemed better always to spray a volume far in excess of the quantity necessary to saturate the air of a cylinder with mist and to control the quantity settling upon the flies by the other means just mentioned.

Tests[3] were made to determine the effect of spraying pressure and of delay in pulling out the slide after spraying on the deposit of mist on the bottom of Petri dishes, on the mortality of houseflies, and on the mean size of droplets settling into the Petri dishes.

In all tests the following factors were kept constant: Flies were between 2 and 3 days old when used, and had been fed milk within 2 hours of testing. The oil was a colorless and odorless kerosene of characteristics given elsewhere (4); when used against flies it was made to contain about 1 mg. of pyrethrins per cubic centimeter, and when used for determination of droplet size it was dyed red. Petri dishes were covered with 12-mesh wire screen. The needle valve of the spray gun was open six turns, its liquid valve was wide open, and adjustment was made to obtain a conical spray. Five cc. was sprayed into each cylinder, and the hand-control

[2] The details of design were worked out and the mechanical drawings were made by G. R. Elwell, now instructor of mechanical engineering, Michigan College of Mining and Technology, Houghton, and revised drawings were made by Alfred H. Yeomans, Bureau of Entomology and Plant Quarantine, who also made and installed the spring ratchet and the drainage rack. Glass blowing on the thistle tube and reservoir flask was done by L. D. Goodhue of the Beltsville, Md., laboratory. To all these men, but particularly to G. R. Elwell, the writers are greatly indebted.

[3] These experiments were made by the junior author assisted by Percy Jones.

valve was closed immediately after all the liquid had been discharged into the cylinder. The period of exposure of flies and Petri dishes was 10 minutes, except when oil droplets were to be sampled for measurement of their diameter, and then it was 5 seconds. The temperature of the spraying room was held at about 78° F.

When the effect of spraying pressure (5, 10, 15, and 20 pounds per square inch) was being studied, the slide was pulled out immediately after spraying ceased; when the effect of delay (0, 5, 10, and 15 seconds) in pulling out the slide was being studied, the spraying pressure was held at 5 pounds per square inch.

Oil deposits were determined by direct weighing of glass slides (3¼ by 4 inches) which were placed on the bottom of screened Petri dishes in the cage holders where the mist settled upon them. To prevent error due to evaporation of the oil film from the slide, two slides of identical dimensions were dried to constant weight for each determination; one of them received the deposit and the other was placed upon the deposit at the termination of the exposure period. Thus the oil was sandwiched between the two slides and its evaporation was practically prevented.

Samples of oil droplets for determination of mean diameter were obtained and measured as follows: A drop of a 4 per cent solution of a liquid coconut oil soap was placed on a microscope cover glass, which was laid on the bottom of a screened Petri dish. The dish was placed in the cage holder of the turntable and exposed to the settling mist as described above. The oil was dyed red so that the droplets settling into the soap solution could be more readily seen and measured under the microscope. The cover glass, bearing the droplets in the form of an oil-in-water emulsion, was inverted and placed on a ring of vaseline on a microscope slide to form a hanging drop. The diameter of droplets of oil in the hanging drop was measured by ocular micrometer. About 100 measurements were made in each hanging drop, the droplets to be measured being selected at random.

The effects of altering spraying pressure are shown in figure 3. The number of tests at each pressure is indicated by the total number of short horizontal lines, the positions of which give the individual results. The mean result at each pressure is indicated by an open circle and the standard deviations of the observations by a stippled band. The effects of delay in pulling out the slide after spraying are shown in figure 4, in which the results are indicated as explained for figure 3.

Examination of figures 3 and 4 shows that increase in spraying pressure or delay in exposing the Petri dishes to the settling mist after spraying reduces the quantity of oil deposited during a 10-minute exposure period and consequently lowers the mortality of houseflies exposed for the same period. The fact that the mean size of oil droplets appears to be reduced by the same treatments helps to explain these results.

When spraying pressure is increased, the oil should be more finely atomized and the droplets should settle less rapidly, the quantity settling in 10 minutes decreasing with increasing pressure, as was found to be true. However, these tests do not indicate the relation of spraying pressure to the quantity of oil in suspension in the air of a cylinder immediately after spraying. It is probable that not only mean droplet size of oil in air, but also the total quantity of oil in suspension in the air, is reduced by increasing pressure. The effect of increasing pressure is therefore probably due to the resultant of these two factors.

The effect of delay in opening the cage holder and exposing the contents to the settling mist is obvious and easy to explain. The longer the delay the more of the largest and most rapidly settling droplets are caught upon the steel slide and excluded from the cage holder. So the quantity of oil settling in the Petri dishes, and hence the mortality of the flies, is reduced with increasing delay. Earlier tests on the wooden turntable indicated that the initial fall of oil droplets is very heavy and gradually tapers off. In 15 seconds after spraying about one-third of the oil in suspension in air settled out. At the end of 5 minutes the quantity deposited was only very slightly less than at the end of 10 minutes, though the mist remained visible in the cylinder for more than 30 minutes.

On the wooden turntable the writers studied the effect of exposure of flies for 5, 10, and 20 minutes to settling mist from a commercial pyrethrum-kerosene spray. The mean kill after 5 minutes' exposure was 35 per cent; after 10 minutes, 63 per cent; after 20 minutes, 86 per cent. As the oil deposit increases very little after the first 5 minutes, the increase in mortality probably cannot be attributed solely to increasing oil deposit. It is likely that the effectiveness increases with the period of exposure, not only because the oil deposit increases, but because evaporation of the oil film on the insects is prevented while they are exposed to an atmosphere saturated with oil vapor. The longer the oil film persists on the insects, the more effective the toxic solute should be in producing deep-seated paralysis and subsequent death. The writers chose a 10-minute exposure as a matter of convenience for the timing of turntable tests.

The degree of mortality also depends on whether or not an absorbent paper is placed on the bottom of the Petri dish to absorb the settled droplets and thus substantially remove them from subsequent contact with the insects. Of course mortality is greater in the absence of paper, which was not used in the present tests.

The results of the foregoing tests show that, if maximum effect of a settling mist is desired, the spraying pressure should be low, the cage holders should be uncovered immediately after spraying, the period of exposure should be as long as practicable, and no paper should used on the bottom of the Petri dishes. Various ways of obtaining any desired effect less than maximum are also indicated.

Not long after the metal turntable was installed, it was used to determine the relative values of two samples of a pyrethrum-kerosene spray. Identical samples were also tested in Peet-Grady chambers of 10 cooperating laboratories. Although all the results have been summarized, compared, and discussed in a special report by the senior author (2), it seems desirable to state briefly in this paper the results obtained with the turntable as a practical example of its performance. Fifty parallel tests were made of each sample. Conditions were so selected that the more toxic sample, containing about 1 mg. of pyrethrins per cc., killed about 50 per cent of the flies. The mean kill in 24 hours caused by this sample was 47.4 per cent, standard deviation $\pm$11.83 per cent. The mean kill caused by the other sample, which contained about 0.5 mg. of pyrethrins per cc. was 20.9 per cent, standard deviation $\pm$7.93 per cent. As these results were not close to either 0 or 100 per cent, they were suitable for estimating the significance of the difference in kill between the two samples. In some of the Peet-Grady chambers the results were too low and in one they were too high for this purpose. The variation in the results with the turntable was about equal to the average variation in the Peet-Grady chambers. The difference in kill, 26.5 per cent, was greater by 4 per cent than the largest difference obtained in a Peet-Grady chamber. This indicates that the turntable method may be more sensitive than the Peet-Grady method in detecting and measuring difference in insecticidal value between two samples. Although the operator had not had much practice with the metal turntable when these tests were made, the average number of tests on the turntable were 25 per working day as compared with an average of 9.3 tests per day in the Peet-Grady chambers. The maximum number of tests per day in a Peet-Grady chamber was 16.7. It was concluded that for the tests in question the turntable produced satisfactory results more efficiently than any Peet-Grady chamber.

*Discussion:* In the following discussion the terms "settling-mist method" and "turntable method" will sometimes be used interchangeably. The former is the more general term that applies to any arrangement of cylinders or chambers in which a mist of insecticide is caused to settle on confined insects.

Because the conditions of the Peet-Grady method simulate those under which liquid household insecticides are used in practice *against houseflies*, whereas those of the turntable do not, before it is adopted as an alternative or substitute method for referee work with this insect, it is reasonable to require proof that the turntable will give results similar to those of the Peet-Grady method. Badertscher (1) has compared the two methods in his own laboratory and found that the Peet-Grady method yields higher kills with pyrethrum sprays and with thiocyanate sprays than does the turntable method. This is in accordance with the experience of the writers. Consequently the settling-mist method cannot be recommended at present for comparative tests (referee work) *against houseflies*. This method, however, can be highly recommended for the control of quality of an insecticide in factory production, where the only problem is to estimate difference in effect due to variation in concentration of the active ingredients in successive batches of the product.

In the foregoing paragraph the writers stressed houseflies, the only insect that is used in the Peet-Grady method. But fly sprays are also recommended for the control of other household pests, such as cockroaches and bedbugs. It has been tacitly assumed that the relative values of sprays determined by the Peet-Grady method against houseflies would apply to these other pests, which cannot well be used in the Peet-Grady method. This assumption is beginning to be doubted. It is conceivable that the turntable method, in which any species of household insect pest may be used, may give results of more general practical value than can the Peet-Grady method. Should this be found to be true, there would be no objection to the use of a settling-mist method for referee work.

The use of a settling mist in the metal turntable, or in any arrangement of cylinders of the dimensions chosen by the writers, may have its limitations, because the maximum deposit of liquid obtainable may be insufficient to produce a satisfactory kill if the insect is not very susceptible to the spray used, as was true in the writers' tests of benzophenone. In such a case it would be necessary to spray the insects directly to build up on their bodies a dose sufficient to kill. The metal turntable was designed so that this could be done merely by spraying into the cylinders upon cages of insects in open cage holders. If desired, the cage may be screened on top and bottom and one may spray through the cage by removing the disc on the bottom of the cage holder. Dosage would have to be controlled by timing the period of spraying. No doubt all aqueous sprays would have to be tested by direct spraying. Precise replications of applications of an aqueous spray could be made by continuous spraying into cylinders without covers while a motor was turning the table at uniform speed. A motor-driven table could also be adapted for use in spraying potted plants in a uniform way. The foregoing suggestions illustrate the variety of adaptations possible for the metal turntable. Aside from the purpose for which it was designed, a Peet-Grady chamber is useful only as a well-ventilated enclosure within which spraying may be done by the turntable or other methods without contaminating insect cultures in the surrounding room.

From the point of view of mechanical design, appearance, and durability it would be difficult to improve the present metal turntable, but the cost of building this equipment is rather high, about $700. The writers therefore wish to emphasize the fact that it is not necessary to duplicate the metal turntable in order to obtain the advantages of the settling-mist method. If only one cylinder is

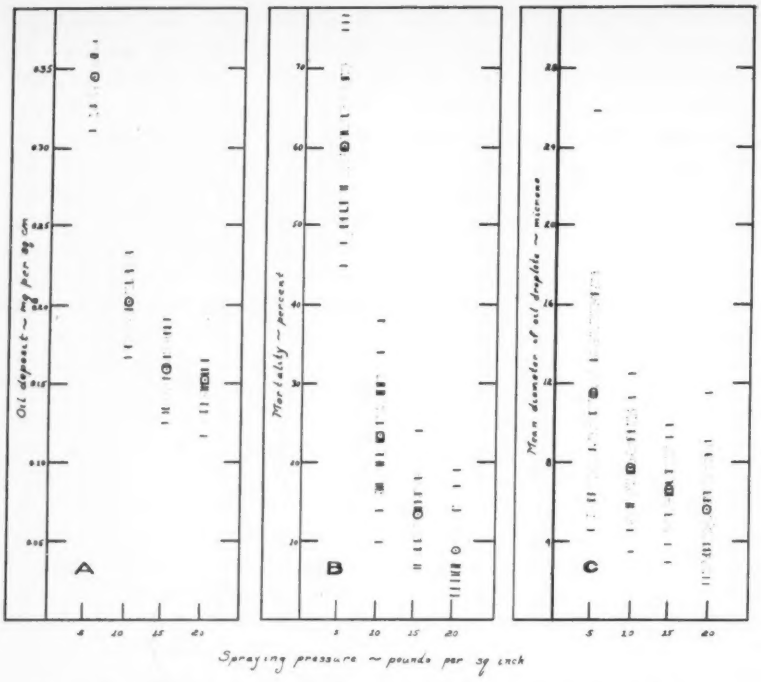



Figure 3. Effect of change of spraying pressure when slide is pulled immediately after spraying on (A) oil deposit, (B) mortality of houseflies, (C) mean diameter of oil droplets

so mounted that exposure of insects to settling mist can be controlled either by manipulating a slide or moving the cylinder, satisfactory tests can be made more rapidly and less laboriously than by the Peet-Grady method. It is not necessary to use an expensive aluminum cylinder. A glass cylinder of the kind used on the older gasoline pumps of service stations will suffice, or even a home-made celluloid cylinder. Nor it is necessary to use an expensive spray gun. Breakey[4] uses an artist's air brush as an atomizer over a single cylinder. Recent experience of the senior author indicates that a relatively cheap air brush may be even more satisfactory. Aside from the cost of the air compressor, reducing valve, and gage that every laboratory doing extensive spraying of any kind must have, the minimum cost of setting up the simplest one-cylinder settling-mist apparatus should be about $25. Next in order of cost would come two or more cylinders arranged in line on a table with provision for moving the atomizer from one to another. An efficient turntable arrangement would certainly be the most expensive, but the amount that may be spent on it will vary widely with design, materials, and number of cylinders. The writers do not advocate any particular specifications for equipment for the settling-mist method, as was done for the Peet-Grady method. The use of a standard insecticide as a yardstick in comparative tests makes exact specifications on equipment unnecessary.

If the writers were to design another metal turntable, they would make several changes in the present model to reduce cost of construction and increase efficiency, but with some sacrifice of neat appearance. The spray gun and the valve and gage panel can be mounted on a pipe stand separate from the turntable to avoid the expense of bringing the air lines through the bearing assembly in the center of the table, which can then be mounted on a simple tripod. Unless the table is to be motor-driven, ball bearings are unnecessary and a simple flat bearing about a pivot can be substituted. Air hose, instead of copper tubing, can be used to connect the gun with the horizontal air pipes supporting it, and the gun can

[4] Mellon Institute of Industrial Research, Pittsburgh, Pa.; personal communication to authors.

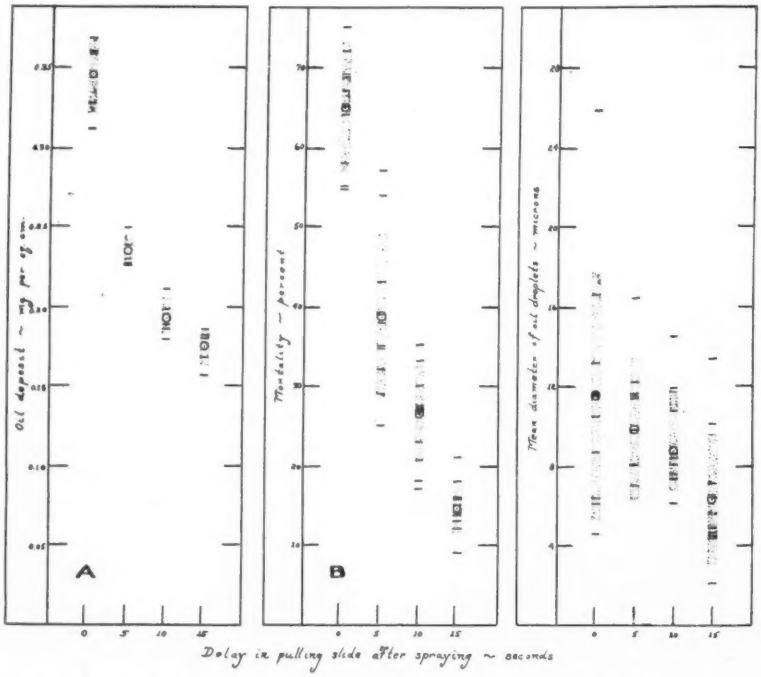



Figure 4. Effect of delay in pulling slide after spraying at 5 pounds per square inch on (A) oil deposit, (B) mortality of houseflies, (C) mean diameter of oil droplets.

be so mounted as to slide back and forth on these pipes and thus made to clear the cylinders when it is necessary to spray a solvent through the gun to clean it; or, for the same purpose, the space between cylinders may be increased and occupied by a small cup attached to each cylinder cover. The solvent can then be sprayed into these cups from a spray gun fixed in position over the cylinders. In order that cages may be introduced into the cage holders from below to avoid unnecessary handling of slides and cylinders, the bottom of the cage holder should not have an inside flange. The cage should be placed on a solid or screened cap, pushed up into the cage holder on the cap, and the cap attached to the cage holder by a short screw turn. It does not seem necessary to push the cage up into the cylinder after the slide is pulled out, although this can readily be done.

*Methods of rearing and handling houseflies for testing purposes:* Concurrent with the development of the metal turntable, some changes were made by the writers in their methods of rearing and handling houseflies for the tests.

A simple method was needed for obtaining an abundance of clean eggs and for adding a definite quantity of them to each jar of culture medium so that flies of fairly uniform size would always be obtained. The methods evolved are as follows: Eggs are obtained from flies in 9½-inch cubical cages, which the writers (3) have used since 1932 with scarcely any change in construction. In these breeding cages, containing about 1,500 flies, the insects are fed pasteurized milk and water (1:1) in custard jars. A perforated disc of cork is floated on the milk to prevent the flies from drowning. Formalin (1:2,000) is added to the milk to retard souring, as suggested by Melvin (6). With nothing in a cage but this cup of milk the flies do not readily oviposit, even at the height of their egg-laying period.

When eggs are wanted, the cup of milk is withdrawn and wads of milk-soaked cotton are placed in the corners of the cage. Within a few hours many batches of eggs are laid between the cotton and a corner. The combined mass in a corner may be larger than a marble. These eggs, uncontaminated with any culture medium, are placed in about 150 cc. of water in a 250-cc. Erlenmeyer flask. The flask is shaken until the individual eggs separate from one another and settle to the bottom like heavy crystals of a chemical compound. The supernatant water is poured off, the flask is twirled again to suspend the eggs in the remaining water, and part of the suspension is poured rapidly into a 15-cc. graduated centrifuge tube. The eggs are allowed to settle, the volume occupied by the eggs is noted, and more of the suspension is added until this volume is 1.0 cc. The eggs in the tube are then thrown into suspension and poured on the surface of Richardson's (8) medium in a large battery jar (9 inches in diameter and 10 inches high). The medium in each jar is composed of 1.2 kg. of bran-alfalfa meal (2:1 by weight) into which is poured and kneaded a mixture comprising 40 cc. of a commercial malt syrup, 150 cc. of a yeast suspension, and 2.5 liters of water. The yeast suspension contains one-half pound of baker's yeast per liter of water.

At first the writers transferred emerging flies to cages in the customary manner. The flies in these cages were chilled either in a cold room (3) or in a special electric refrigerator to enable them to be counted out in lots of 100 and transferred to Petri dishes. As an ordinary electric refrigerator would not lower the temperature enough for this purpose and as the chilled flies had to be counted with inconvenient rapidity, it seemed desirable to eliminate the chilling process.

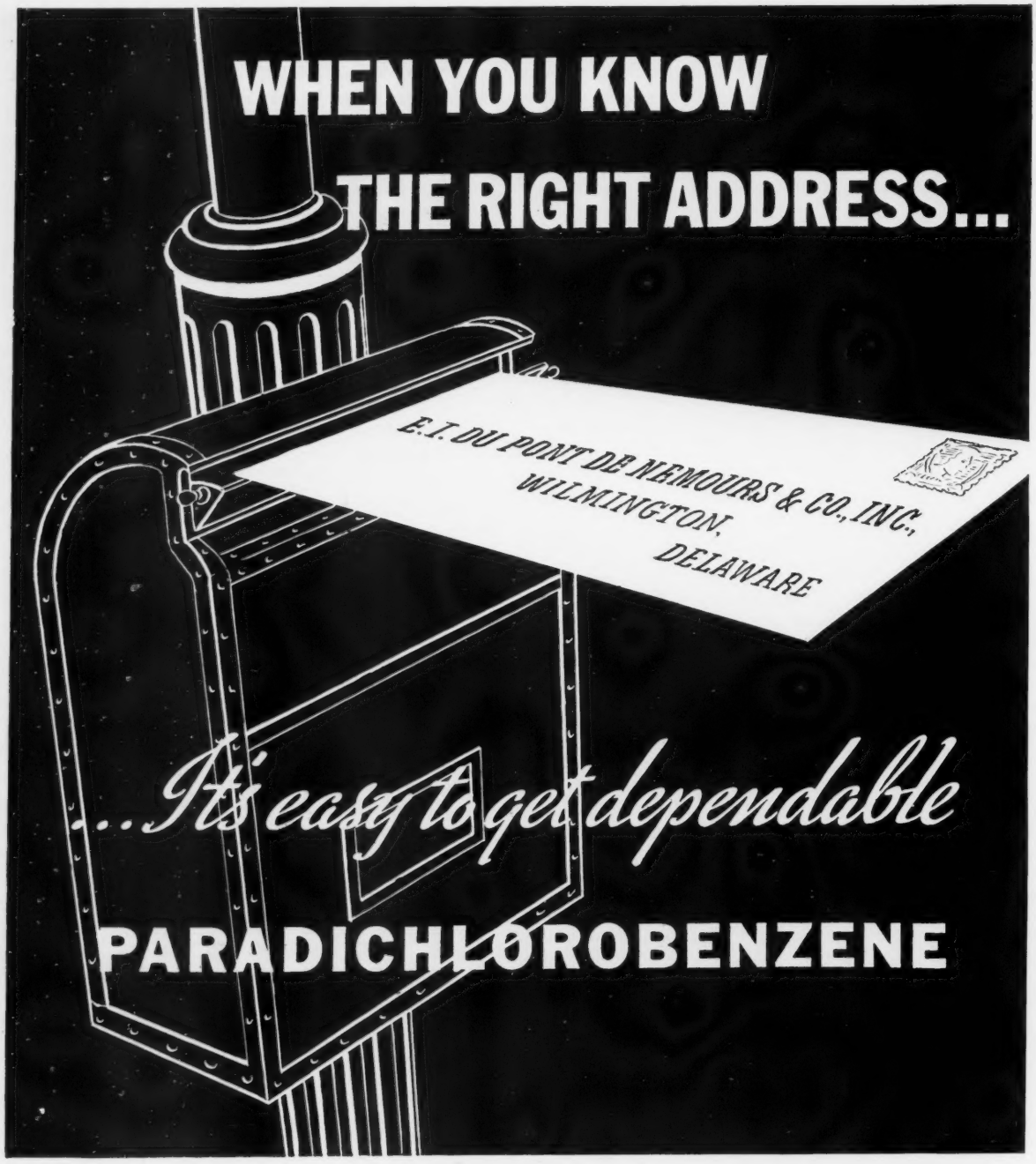
This was done by collecting puparia and measuring them into Petri dishes in the following manner: Culture jars in which maggots are entering the prepupal migratory stage are inverted over a 12-mesh wire screen on the frame of a lower wooden stand. Enameled milk pans containing sawdust are placed under the stand below each inverted jar. During a 2-day period nearly all the maggots in a jar leave the medium by crawling through the screen and drop into a pan. The pans containing prepupae are then placed in an incubator at 83° F. and 75 per cent relative humidity. The newly formed puparia are separated from the sawdust and prepupae by screening, the sawdust dropping through a 12-inch screen and the prepupae crawling through.

Random samples of clean puparia collected within a limited period are then placed in 5½-inch Petri dishes. This is done by counting out 115 puparia into a graduated centrifuge tube, noting the volume, and then adding this volume of puparia to each dish. The dishes are then covered with 12-mesh screen and placed in an incubator (or in a cool room if an oversupply occurs and development is to be retarded). When the flies emerge (in about 3 days at incubator temperature), they are fed until used in the tests by placing on the screen of each dish a wad of milk-soaked cotton on a piece of filter paper. A similar method of feeding was used by Zermuehlen and Allen (10).

As the emergence of flies averages about 90 per cent, each dish, when used in the tests, will contain about 100 flies and their pupal cases. Although the exact number of flies in each dish can be determined in advance by counting the puparia added and subtracting the number from which flies failed to emerge, it is easier to count the total number of flies in each observation cage after treatment. The presence of pupal cases in the dishes does not interfere with the tests. The preparation in the foregoing manner of dishes of flies for testing has a great advantage over the chilling process both in eliminating expensive refrigerating equipment and in making tests possible at short notice, since large numbers of dishes can be held ready for tests at any time.

*Summary:* The construction and operation of an all-metal turntable for testing contact insecticides

(*Turn to Page* 149)

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# Insecticide Literature and Patents

**By Dr. R. C. Roark**

*Chief, Insecticide Investigations*
*Bureau of Entomology and*
*Plant Quarantine*

THIS report is a review of the more important papers and patents on pyrethrum, derris, and insecticide synthetics that have been published since the last report on this subject by Curlett in December, 1937. (*Soap*, vol. 14, No. 1, p. 117), and has been prepared at the request of the Committee on Patents and Literature of the N.A.I.D.M.

### Biological Testing

The black carpet beetle has been carefully studied by Back and Cotton. (*Jour. Econ. Ent.* 31:280). A native of Europe, it was brought to America in the baggage of early colonists and was first recorded in the United States in 1806.

Eagleson (*Soap* 13 (12):115) described a new food and new equipment for the large scale rearing of house flies.

Murray (*Soap* 14 (2):99) presented a statistical study of fly mortality dosage in the Peet-Grady method.

Murray and Caler (*Soap* 14 (3):107) reported that wild flies are more susceptible than reared flies when tested by the Peet-Grady method. This means that results obtained by the Peet-Grady test are not directly comparable to those obtained under actual conditions of use.

Simanton and Miller (*Jour. Econ. Ent.* 30:917) reported that very young houseflies are more easily paralyzed but less easily killed than are older flies. By the Peet-Grady method female flies are about twice as difficult to kill as are male flies. Female flies are also more difficult to paralyze.

Miller and Simanton (*Soap* 14(5):103) discuss the biological factors in Peet-Grady results and Simanton and Miller (Soap 14(5): 115) propose a modified method which takes into account variations in sex ratio without necessitating the sexing of flies. It also corrects certain other sources of variation not compensated by the method now in use.

### Labeling and Specifications

Opitz (*Soap* 13(11):101) discussed specifications for a liquid insecticide suitable for combating crawling insects and pointed out that tests designed for a fly spray are not applicable to a bedbug spray.

Jordan (*Soap* 14(2):96) offered specifications for liquid insecticides and disinfectants.

Booser (*Soap* 14(3):111 and (4):109) discussed insecticide specifications from the standpoint of the buyer.

Labeling insecticides in California was discussed by Cox (*Soap* 14(2):94).

The Food and Drug Administration regulations on the lebaling of derris and cube products are reproduced in full in *Soap* XIV (3):125.

### Pyrethrum

An anonymous (*Soap* 13(12): 107) writer called attention to the dark color and low pyrethrin content of many of the 1937 pyrethrum flower shipments received by American importers. (Editorial staff investigation.)

An anonymous (*Soap* 14(3): 98) writer criticises directions put out by certain state agricultural experiment stations for the preparation of home made pyrethrum-kerosene fly sprays, and points out that such sprays are inferior in strength, are dirty, and cost no less than commercial products.

deOng (*Jour.Econ. Ent.* 30: 921) fed sheep hay that had been sprayed with pyrethrum extract in kerosene or in Diesel oil. Pyrethrum had no harmful effect on the sheep nor did it repel them from sprayed grass.

Additional work on the nature of the constituents of pyrethrum flowers has been reported by Acree and LaForge (*Jour. Organic Chem.* 2:308). Pyrethrum oleoresin contains free palmitic and linoleic acids which may be isolated by fractional distillation of the mixed methyl esters.

Rose and Heller (*Jour. Organic Chem.* 2:484) reported the existence of chrysanthin in pyrethrum flowers. This is a colorless, crystalline, optically active compound of the formula $C_{17}H_{22}O_5$. Preliminary insecticidal tests with chrysanthin have shown it to be relatively non-toxic.

Holaday (*Ind. Eng. Chem.*

Anal. Ed. 10:5) determines Pyrethrin I in commercial mineral oil pyrethrum insecticides containing perfumes by a modification of Wilcoxon's (Contrib. Boyce Thompson Inst. 8:175) method. Seil's method is not satisfactory for these products.

Haller and Sullivan (*Jour. Econ. Ent.* 31:266) reported that both pyrethrin I and pyrethrin II have good "knockdown effect" against flies and that this effect is for the greater part destroyed when the pyrethrins are subjected to mild catalytic hydrogenation. Hydrogenation also materially reduces the mortality caused by the concentrate in which pyrethrin I predominates. The mortality caused by the concentrate in which pyrethrin II predominates was low and was not materially reduced by hydrogenation. The mortality caused by this sample was so low before hydrogenation that a marked reduction would not normally be expected.

Menusan (*Jour. Econ. Ent.* 31:259) found that pyrethrum added to sulphur dust slightly increased the yield of potatoes in New York mucklands.

Hamilton (*Jour. Econ. Ent.* 31:189) found pyrethrum powder (pyrethrins 0.9 per cent) and Dry Pyrocide (diluted 1 + 3 with talc—pyrethrins 0.5 per cent) to give an excellent kill of orchid weevil, *Dioremerellus laevimargo* Champ in laboratory tests.

### Pyrethrum compared with Derris

S. E. Jones (*Jour. Econ. Ent.* 31:127) reported derris-sulphur dust effective but a pyrethrum sulphur dust ineffective against *Phthia picta* Drury on tomatoes in Texas.

Beckwith (*Jour. Econ. Ent.* 31:253) reported that adult sulfur leaf roller, *Sparganothis sulfureana* Clem. can be killed by pyrethrum dust but derris was ineffective against the larvae.

Kelsall and Stultz (*Ont. Ent. Soc.* 67:20, 1937) reported that pyrethrum dust was more effective than derris dust against fall webworm, satin moth, gray banded leaf roller, bronze cutworm, cabbage looper, strawberry weevil, cabbage aphis, buffalo tree hopper and white apple leaf hopper. The authors conclude teat the toxicity of derris was considerably more persistent than that of pyrethrum.

The Massachusetts Agricultural Experiment Station (Bull. 339) in 1937 reported that derris powder + fish oil soap was effective in controlling fire beetles, cranberry flea beetles and cranberry spittle insects on cranberries. Derris spray was superior to a thiocyanate compound for the control of the gladiolus thrips. Pyrethrum spray was effective against the greenhouse leaf tier.

Thallenhorst (*Ztschr. Angew Ent.* 23:615) in 1937 reported tests of proprietary derris, pyrethrum and nicotine dusts upon *Pieris brassicae* L. Derris gave the best results.

Huckett (*Jour. Econ. Ent.* 31:266) found that the addition of cube or pyrethrum to Bordeaux mixture at the time of spraying imparted added value for the control of the Mexican bean beetle on lima beans. Cube was better than pyrethrum when added to sulphur dusts.

Takei and Tada (*Rev. Appl. Ent.* (A) 25:675) state that both pyrethrum and rotenone are effective against insect pests of woolen goods, but that the latter is preferable.

Back (*U. S. Dept. Agr. leaflet* 145, Jan., 1938) recommends commercial pyrethrum and derris sprays as contact sprays for the control of clothes moths.

Barrett (*Canad. Ent.* 69:73) in 1937 review recent experimental work with derris and pyrethrum. Derris dusts containing 0.5 per cent, 0.75 per cent and 1 per cent rotenone, made by the dilution of derris root powder with some inert material, such as clay, talc, sulphur, tobacco, etc., have given adequate controls of insect pests, such as Mexican bean beetle, cabbage worm, asparagus beetle, cucumber beetle, melon worm, Colorado potato beetle, and a few others.

Derris spray also gave good control of the European red mite, leaf roller on strawberries, imported currant worm, and aphis on currants and spinach. A spray containing derris and pyrethrum extracts is stated to be an excellent cattle fly spray.

Hammer (*Jour. Econ. Ent.* 31:244) reported derris, pyrethrum and a proprietary mixture of the two to be ineffective against young nymphs of the scurfly scale, *Chionaspis furfura* Fitch.

Smith and Scales (*Jour. Econ. Ent.* 30:864) reported pyrethrum (0.76 per cent total pyrethrins) effective against leafworm and *Lygus pratensis* on cotton. Cube was as effective as calcium arsenate against the boll weevil.

### Derris and Cube

Georgi (*Malayan Agr. Jour.* 25:425) reported the rotenone content of 25 samples of *Derris elliptica* Changi No. 2 to vary from 5.6 to 8.9, average 7.2. Georgi advocates chopping the fresh roots in the fields. A bale of chopped root contains 240 pounds, whereas a bale of ordinary root contains about 175 pounds.

According to Reteaud (*La Nature* 2996:217. 1937), the maximum content of rotenone in derris growing in Indochina is 4.3 per cent.

Jones and Love (*Jour. Am. Chem. Soc.* 59:3694) determined the solubility of rotenone in a wide variety of solvents. Methylene chloride dissolves more rotenone (58.2 grams in 100 grams solvent) at 25° C. than any other material. At 100° C. rotenone is quite soluble in pine oil (25 grams in 100 grams solvent).

LaDue (*Jour. Econ. Ent.* 31:319) reported higher ketones to be good intermediary solvents for derris extract in pertoleum spray oil.

Jones and Graham (*Ind. Eng. Chem.* Anal. Ed. 10:19) find chloroform the best solvent for extracting rotenone from derris and cube. The powders must be firmly ground (95 per cent through a 60 mesh sieve).

The method now used by the United States Department of Agriculture in analyzing derris and cube powders is described by Jones and Graham (*Jour. Assoc. Off. Agr. Chem.*

31:148). Rotenone is extracted with chloroform at room temperature and determined by a modification of the $CCl_4$ procedure.

Walker (*Jour. Econ. Ent.* 30:692) discussed Ultrawet, a sulphonated petroleum oil, and its value as a wetting agent for use with derris and cube.

H. A. Jones (*Jour. Econ. Ent.* 31:127) found that cube root attacked by a borer (*Dinoderus bifoveolatus* Woll.) suffered no loss in rotenone content provided none of the powdered material was lost.

Derris (4 per cent rotenone), derris with sulfur and derris with talc were ineffective against the cowpea curculio, *Chalcodermus aeneus* Boh. (Arant, *Jour. Econ. Ent.* 31:309).

Weigel and Nelson (*Jour. Econ. Ent.* 31:211) found derris more effective than cube of the same rotenone content for the control of red spiders and thrips on greenhouse grown tomato and cucumber plants. The difference is explainable on the basis of the total extractives.

The Peurto Rico Experiment Station (Ann. Report 1936) found derris + commercial sticker and spreader to increase the yield of marketable onions which had been attacked by onion thrips 210 per cent over the check. *Derris elliptica* shows promise of becoming commercially important in Puerto Rico. Efforts are being made to grow other rotenone-bearing plants there.

Smith and Utter (U.S.D.A. Circ. 445) reported a spray containing derris powder equivalent to 0.025 per cent rotenone and sulphonated castor oil 1:400 to be effective against iris thrips, *Bregmatothrips iridis*.

The Louisiana Agricultural Experiment Station (*Bug News*, 1 (4):1-2, Dec. 1937) recommends derris dust containing 1 per cent rotenone for the control of cabbage worms, including the cabbage looper, cattle grubs and the turnip aphid.

According to the Idaho Agricultural Experiment Station (*Idaho Bull.* 221) the pea weevil may be successfully controlled by derris dust.

Hutson (*Mich. Ext. Bull.* 180) in 1937 recommended derris for the control of asparagus beetle, *Crioceris asparagi*, 12-spotted asparagus beetle, *Crioceris duodecimpunctata;* Mexican bean beetle, imported cabbage worm, *Pieris rapae;* diamondback moth, *Plutella maculipennis;* and cabbage looper, *Autographa brassicae*. Derris is ineffective, however, against celery leaf tier and corn ear worm.

According to the U. S. Dept. Agr. (Press Release March 11, 1938) derris spray is a promising insecticide for the control of the European corn borer on early market sweet corn. It must be applied during the comparatively brief period the caterpillar spends on the outside of the plant.

Bishopp (*U. S. Dept. Agr. Leaflet* 152, 1937) recommends derris powder for the control of fleas on dogs and cats, and also of sticktight flea.

Bourne and Boyd (*Mass. Leaflet* 171) recommend derris for the control of Mexican bean beetle, cabbage worms, asparagus beetle, European corn borer, and striped cucumber beetle.

Felt and Bromley (*Jour. Econ. Ent.* 31:173) reported derris (4 per cent retenone) at 4 lbs. per 100 gallons to be effective against young cankerworms but ineffective against pin oak leaf rollers.

Roark (*Soap* 14(1):111) reviewed reports on the relative insecticidal values of derris and cube. Although derris appears better for the control of some insects, cube at present prices is the more economical material.

Haug and Peterson (*Jour. Econ. Ent.* 31:87) reported derris to be toxic to the beneficial Coccinellid, *Hippodamia convergens* Guer.

Batchelder and Questel (Bur. of Ent. and Pl. Quarantine publication E-421) reported that derris powder containing 4 per cent rotenone used at the rate of 2 pounds to 50 gallons of water is useful in controling European corn borer, *Pyrausta nubilalis* Hbn., on dahlias.

Yamada (*Rev. Appl. Ent.* (A) 25:675) in 1937 reported that clothes treated with rotenone (1 oz. to 25 lb. cloth weight) are not attacked by larvae of *Anthrenus verbasci* L.

Hudgkiss (*New York Circ.* 173) in 1937 recommended a derris spray containing rosin residue emulsion for the protection of early ripening peaches and plums against Japanese beetles.

### Synthetics

Tischler and Viehoever (*Soap* 14(2):109) reported tests with alpha-naphthyl isothiocyanate against houseflies, clothes moth larvae, and carpet beetle larvae, which indicate it has promising insecticidal action. Its speed of action is greatly hastened by the addition of pyrethrum extract.

Auch (*Soap* 14(4):99) discussed moth specialties containing naphthalene, p-dichlorobenzene, ethylene dichloride, etc.

Fink, Smith, Vivian, and Claborn (*Bur. Ent. & Pl. Quarantine No. E*-425, March 1938) tested 400 synthetic organic compounds for insecticidal value. Of these 23 were adjudged to be at least as toxic as rotenone to mosquito larvae. The 10 most toxic compounds tested were phenothiazine, 4-(p-bromo-phenylazo)-rosorcinol, 4-(p-bromophenylazo)-o-cresol, 4-(p-bromophenylazo)-phenol, 4-(2, 5-dichlorophenylazo)-o-cresol, 4(p-bromophenylazo)-m-cresol, phenyl mercaptan, phenothioxin, p-tolyl mercaptan, and 6-methylphenothiazine.

Cupples (*Bur. Ent. & Pl. Quarantine E*-426, April, 1938) has compiled a list of proprietary detergents, wetting agents and emulsifying agents, many of which are suitable for use with pyrethrum or derris extracts.

Dietz and Pierpont (*Jour. Econ. Ent.* 31:200) reported derris and tetramethyl thiuram disulfide and mixtures of the two, when used with rosin residue emulsion as a sticker, to be good foliage protectants against the Japanese beetle.

### Patents

United States patents on insecticides and disinfectants have been abstracted by Roark in the Review of U. S. Patents relating to Pest Control issued monthly by the Bureau of

(*Turn to Page* 147)

# New Insecticide Compound

**By Dr. Alfred Weed**
*John Powell & Co.*

DURING the past four years, tests by the Peet-Grady Method have been made on a number of organic compounds both alone and in combination with the active principles of pyrethrum. The object has been a search for a substitute for all or a part of the pyrethrum used in household liquid insecticides. Certain of the compounds tested have shown greater toxicity to insects than the compound discussed here, but insect killing value represents only one aspect in a study of this kind. The compound finally selected from these investigations is one which requires the addition of a rapid paralyzing agent such as pyrethrum, since the chemical product acts slowly when used alone in practical concentrations. The compound itself is isobutyl undecylenamide,* an alcohol derivative combined with a vegetable acid. The compound is miscible with oil extracts of pyrethrum, forming clear solutions. The accompanying table indicates the flexibility of these combinations.

Rather than go into all the details of the tables of comparative data, the accompanying summary has been used to indicate the more important combinations and the grade designations of the National Association of Insecticide and Disinfectant Manufacturers, Inc. in which they fall. While the weakest concentration presented gives a spray equal or superior to the Official Test Insecticide in mortality, speed of paralysis at this concentration falls below the desired 95 per cent level. The knockdowns obtained with higher concentrations of pyrethrum lie at the 95 per cent level and above.

The properties of insecticides containing isobutyl undecylenamide may be summarized briefly as follows:

I. TOXICITY TO INSECTS:

As outlined in the table, all of the concentrations considered are the equal or superior to the Official Test Insecticide in killing power strength.

II. STABILITY

Mixed compositions (pyrethrum with isobutyl undecylenamide) packed in tin and glass have been retained for periods ranging from six to twenty-four months. These remained clear, free from sediment and subjected to test at thirty and sixty-day intervals conformed to the grade originally produced.

III. SAFETY FACTOR:

The compound is not harmful to warm-blooded animals. It does not irritate the eyes or the skin. Further details covering the toxicological tests will appear at a later date and more information on this subject appears herewith.

IV. ODOR:

The compound has a mild, apricot type odor, easily masked with a number of perfume odors. It has no disagreeable effect on the nasal membranes when inhaled.

V. TASTE:

The compound has a slightly acrid taste similar to that of pyrethrum. Foodstuffs deliberately exposed to spray containing double the concentrations appearing in the table gave no indications of contamination when eaten.

VI. STAINING:

The compound in the practical concentrations cited in the table does not corrode metals and does not stain.

The conclusion is that isobutyl undecylenamide provides an efficient chemical substitute for part of the pyrethrum customarily used in liquid insecticides. Its characteristics conform with prevalent conceptions of what constitutes a good insecticide.

Unsuccessful attempts to cultivate pyrethrum commercially in the United States principally because of high labor costs, and the uncertainty of foreign supplies have been instrumental in stimulating research to find a chemical substitute in whole or in part for pyrethrum to satify the ever-growing demand for non-poisonous insecticides in the household, farm, and agricultural fields. The pyrethrum crop has varied markedly from year to year in quality and in quantity. The declining quality of the flowers of the past few crops has given added impetus to the chemical research during the last two years.

**Grading of Mixtures of Pyrethrum and Isobutyl Undecylenamide (N. A. I. D. M. Grades)**

| *Laboratory* | (1) 25-420 | 30-420 | (2) 40-420 | (3) (4) 30-576 | 40-576 | O.T.I. |
|---|---|---|---|---|---|---|
| 1 | A | A | A+ | AA | AA+ | |
| 2 | B+ | A | A | | AA | B |
| 3 | A | | | | AA+ | B |
| 4 | B+ | A | A+ | | AA+ | B |
| 5 | A | | | | AA | |
| 6 | | | A | | | B |
| 7 | | | A+ | | | |

(1) The figures heading these columns represent concentrations of total pyrethrins and Isobutyl undecylenamide in milligrams per one hundred cubic centimeters.
(2) 100 milligrams total pyrethrins per one hundred cubic centimeters approximates a 5 per cent concentration of a standard 20 pound pyrethrum concentrate. Therefore, 40 milligrams total pyrethrins represents 40 per cent of the normal amount of pyrethrum extract used or approximately 4/10 of a pound per gallon.
(3) 420 milligrams of Isobutyl undecylenamide = .52 per cent by weight.
(4) 576 milligrams Isobutyl undecylenamide = .72 per cent by weight.

* Developed in research laboratories of E. I. du Pont de Nemours & Co., Wilmington. Product patented.

The uncertainties engendered by the Sino-Japanese undeclared war have also added their influence in speeding this work. It is this background which has accounted in some part for the development of isobutyl undecylenamide as one compound among many synthetic organic products which has most of the requisite characteristics of an ingredient for effective and non-poisonous household fly sprays.

As the result of experimental work conducted at the Haskell Laboratory of Industrial Toxicology, covering administration by mouth, subcutaneous injection, inhalation of mist, and application to the skin, it was concluded that the compound is safe for use as a liquid insecticide spray without fear of poisonous effects.

Administration by mouth experiments were done on rats, the animals being fed various sized doses from .5 to 10 cc. per kilo body weight. The minimal fatal dose killing 70 per cent of the animals in 20 to 90 minutes was 4 cc. per kilo body weight, indicating a relatively low toxicity. A second group of rats were fed 2 cc. of isobutyl undecylenamide every second day for a period of six weeks. None of these animals showed toxic symptoms and all gained weight during the experiment. Subcutaneous injections of 1.15 to 7.27 cc. per kilo body weight, using rats and mice, gave no evidence of toxic action.

In order to determine whether or not isobutyl undecylenamide is liable to produce irritation to the skin, 1 cc. was applied daily to the shaved backs of white rats five times a week for seven weeks. None of these animals showed any skin irritation and the hair continued to grow at the site of application.

The inhalation experiments were done to determine whether isobutyl undecylenamide would produce lung irritation or any remote effects as the result of absorption through the respiratory tract. Rabbits were subjected to the mist of isobutyl undecylenamide for one and one-half hours a day up to 15 days. This mode of administration did not result in lung irritation or any other toxic effects. All experimental animals were subjected to gross and microscopic pathological examinations.

The inhalation and skin application experiments represent the conditions under which the user will be subjected to the normal exposures to isobutyl undecylenamide. Inasmuch as the compound shows no toxic effect upon animals under conditions which are extreme, it is safe to assume that under normal conditions the human will not be affected by any untoward symptoms either from skin irritation, nasal or lung irritation or toxic effects as the result of absorption.

## Rotenone Determination

From the previously reported study and a comparison of the various methods proposed for the determination of rotenone by extraction and crystallization, a procedure is recommended and described in detail for the determination of rotenone in finely powdered derris or cube roots.

It consists essentially in shaking 30 grams for not less than four hours with 300 cc. of chloroform, filtering, evaporating the chloroform from a 200-cc. aliquot at a low temperature (the last traces are removed by repeated cautious heating under reduced pressure after addition of carbon tetrachloride), taking up in exactly 25 cc. of carbon tetrachloride, cooling, seeding with a few crystals of rotenone carbon tetrachloride solvate if necessary, and allowing to crystallize overnight at 0° C. If necessary, sufficient rotenone, accurately weighed, should be added to give a final weighed amount of a least one gram of pure rotenone. The crystals are filtered on a tared Gooch crucible, washed with carbon tetrachloride, saturated with rotenone, dried to constant weight at 40° C., and weighed, to obtain "crude rotenone carbon tetrachloride solvate." One gram is dissolved in 10 cc. of alcohol previously saturated at room temperature with rotenone, allowed to crystallize, preferably overnight, filtered, washed with alcohol saturated with rotenone at the temperature of recrystallization, and dried at 105° C. to constant weight. Rotenone in 20 grams of sample equals (weight of pure rotenone multiplied by weight of "crude rotenone-carbon tetrachloride solvate"), plus 0.07 gram. Howard A. Jones and J. J. T. Graham. *J. Assoc. Official Agr. Chem.* **21,** 148-51 (1938).

## Toxicity of Derris

Information was sought as to whether prolonged eating of derris in minute quantities, such as might be present on sprayed fruits or vegetables, might have any harmful effect on warm-blooded animals. Small amounts of derris were fed daily to rabbits, dogs and white rats for periods of 1 to 8 months. In adult dogs on diets containing 0.04 per cent of derris with a rotenone content of 9.6 per cent, no symptoms of toxicity were observed. In young growing dogs on the same diet, the most pronounced effect was the stunting of growth. An apparent positive or negative effect on all of the animals depended on the concentration of derris fed. Pathological studies on the tissues of dogs and rats indicated that derris in all the concentrations studied was somewhat injurious, the liver being the only organ consistently damaged. Anthony M. Ambrose and Harvey B. Haag. *Ind. Eng. Chem.* **30,** 592-5 (1938).

## Triethanolamine Spray

Triethanolamine oleate is widely used as a commercial emulsifying agent in insecticidal sprays. Its advantages over alkali-metal soaps for the purpose are: ready solubility in water and oils, even wetting of leaf surfaces, deep impregnation of the insect, and low alkalinity which reduces foliage injury. At concentrations of 0.01 to 1.0 per cent of oleic acid, the wetting power of aqueous triethanolamine-oleic acid mixtures increases with an increase of the molecular ratio of triethanolamine to oleic acid, up to 6.0. At 1.0 per cent oleic acid, an abrupt change in wetting power takes place at a molecular ratio of 1. Besides other desirable properties, solutions of compound produce a stable foam. J. L. Cupples. *J. Econ. Entomol.* **31,** 68-70 (1938).

# News.....

### Issue Termite Bulletin

J. J. Davis, Dept. of Entomology, Purdue University Agricultural Experiment Station, Lafayette, Ind., is the author of a new bulletin entitled "The Prevention and Control of Termites", published in cooperation with the U. S. Dept. of Agriculture. The bulletin traces the sources of termite infestation, important points in their life history, and gives suggestions for their prevention and control.

### Offers New Fungicide Test

A new and more severe test for athlete's foot remedies was declared to be necessary by Dr. George F. Reddish of Lambert Pharmacal Co., St. Louis, in a talk at the recent session of the Scientific Section of the Proprietary Association held at the Hotel Biltmore, New York, last month. Dr. Reddish outlined such a test and described its use in testing fungicides against the five organisms commonly present in cases of athlete's foot.

### Fuld Bros. Name N. Y. Agent

Fuld Brothers, Baltimore, manufacturers of sanitary chemicals, have appointed Eastern States Supply Co., of New York and Brooklyn, sales representatives in metropolitan New York. Eastern States Supply Co., formerly acted as sales representatives in New York for Baird & McGuire, Inc., who have recently established their own sales office at 79 Wall St. J. Frank Toole and Martin I. McGowan, of Eastern States Supply, plan an intensive selling campaign in the New York district for the Fuld line. Fuld Brothers also maintain sales agencies in Seattle, Kansas City and Boston.

### Wants American Disinfectants

A concern in Nairobi, East Africa, is interested in communicating with American manufacturers of disinfectants relative to establishing an agency arrangement. Interested parties may secure further particulars through the U. S. Bureau of Foreign and Domestic Commerce, Washington, inquiry No. 6205.

### Park Chemical Opens Branch

Park Chemical Co., Chillicothe, Mo., has opened a branch at Alliance, Neb. The new branch will carry the same products which are now being distributed through the company's main office.

### British Firms Plan Merger

Reckitt & Sons, British manufacturers of disinfectants and cleansing preparations, have signed a preliminary agreement for an amalgamation with J. & J. Colman, British mustard manufacturer. A new operating company, Reckitt & Colman, Ltd., is planned.

### Issues First Aid Booklet

Lehn & Fink Products Corp., Bloomfield, N. J., is distributing a booklet entitled "53 Emergency Aids While Waiting For the Doctor" with each purchase of "Lysol" disinfectant at the drug counter. Dr. Allan Roy Dafoe, physician to the Dionne quintuplets, is the author of the booklet.

### Join N.A.I.D.M.

Pioneer Mfg. Co., Cleveland, and Salem Chemical & Supply Co., Salem, Mass., have been elected to active membership in the National Association of Insecticide and Disinfectant Manufacturers, Inc.

### Penick Representative Marries

Ralph A. Olson and Helen Rasmus were married on May 6th in Chicago. Following a southern honeymoon which included a week at French Lick Springs and a visit to the Kentucky Derby, the couple are making their home in Chicago. Mr. Olson is connected with the Chicago sales staff of S. B. Penick & Co., New York.

### Dr. J. M. Kessler Dies

Dr. John Martin Kessler, 55, president of Kessler Chemical Corp., insecticides and alcohol solvents, Philadelphia, died last month. He founded Kessler Chemical Co. in 1920 and remained as president until 1929 when the firm became a wholly owned subsidiary of American Commercial Alcohol Co. under the name of Kessler Chemical Corp. Dr. Kessler continued as its head until his death. He was a member of the American Chemical Society and the Chemist's Club, New York. Surviving are his wife, a son, a daughter and a brother.

### George Joins Associated

E. M. George, formerly of J. L. Hopkins Co., New York, crude drug house, has joined the sales staff of Associated Chemists, Inc., Chicago. Mr. George will call on the insecticide trade in the Chicago territory.

### Wants Insecticide Agency

A concern in Cairo, Egypt, is interested in establishing an agency arrangement for the sale of household insecticides of American manufacture. Interested parties may secure further particulars by addressing the U. S. Bureau of Foreign and Domestic Commerce, Washington, inquiry No. 6288.

### Attend Com. Chamber Session

Charles P. McCormick, president and George M. Armor, vice-president of McCormick and Co., Baltimore, are attending the 26th annual meeting of the Chamber of Commerce of the U. S. A. in Washington, May 2nd to 5th. Mr. McCormick is a National Councillor for the Flavoring Extract Manufacturing Association, and Mr. Armor, National Councillor for the American Spice Trade Association.

### "Chloro" Appoints Agency

Chloro Chemical Co., New York, has placed the advertising account for "Chloro" moth destroyer with Dundes & Frank, also of New York Business publications, direct mail and newspapers will be used.

# Defends Insecticide Laws-

# Cites Enforcement Needs

DEFENDING good state laws affecting insecticides, disinfectants, and the like, and citing their proper enforcement as a protection to reputable manufacturers and the public, E. N. Rosenfeld of the Tropical Chemical Co., Los Angeles, takes exception to recent severe editorial criticism in SOAP of the growing list of new state legislation and regulations bearing directly on these industries. He points out the case of his own state as an example of correct enforcement policies. He favors an adequate insecticide and fungicide law in every state with effective enforcement, and hopes for a standardization of state laws. His letter states in part:

"Being acquainted with SOAP for years, and aware of its increasing usefulness and popularity (especially on the West Coast), we feel that it provides a unique safeguard against numerous possible abuses of the industries represented.

In the April 1938 issue, there appears an editorial comment beginning "The ruthlessness of foreign dictators * * * " which has given us cause for much reflection. It is only after careful thought that we write you and respectfully ask that this receive the impartial and good humored reviewing which usually characterizes your editorial pages.

Insofar as the editorial is concerned with safeguarding the interests of the insecticide and disinfectant industries from legislative encroachment and abuse, we are heartily in sympathy with it. However, it seems to us that a serious error of omission exists in it,—inadvertently, no doubt. No mention at all is made of the benefits accruing to those industries from good laws properly enforced.

Our experiences are first-hand ones derived from a widespread interstate business. The sum we pay annually for various license fees, registrations and brand taxes, is a considerable one. But, some of our experiences have convinced us that whatever these law compliance difficulties and expenses may be, they are worth enduring and more than compensated for by direct and indirect benefits resulting from the good laws and the good law enforcement mentioned.

For example, it is our experience that California's insecticide and fungicide law is rather rigidly enforced. We attempted to determine the total volume of business in those commodities in this State, and concluded that perhaps not less than $8,000,000 is spent annually. It requires no discussion to render obvious the tremendous damage which would be done to legitimately conducted business by frauds, fakes, incompetents and crack-pots who would spring up overnight if a rigid control work were not in force impartially against the products of both intra and inter-state manufacturers.

To illustrate a second point, we cite a case where it was said during a highly competitive bidding session involving nearly a million pounds of insecticide dust, that the quality of one of our products would have to remain a mystery because it would be impossible to determine chemically, the truth or falsity of our guarantee of 0.7 per cent rotenone. So small a quantity of rotenone it was said, was not determinable. The situation was saved for us when we produced an official analysis on an officially drawn sample by the State Division of Chemistry, showing the product in question to contain within 0.15 per cent of the guaranteed amount (actually 0.90 per cent, which we had made it up to contain). Incidentally, the sample mentioned had been drawn in the field some time previously without our knowledge, and as a matter of control work routine.

Of course, this example is open to the criticism of personal bias resulting from personal benefit, and we admit it. But we also know that similar cases occur many times during the year with products of other manufacturers, and with similar benefit to those conducting their businesses within the spirit and the letter of the law.

We also know that this same competent and unbiased control work has several times resulted in a sizable financial protection to manufacturers who were either threatened with a lawsuit or who were engaged in fighting one instituted by a disgruntled consumer who figured that a prominent target was also an easy one, good for a juicy judgment.

Testimony of control officers in these cases saved the day for the manufacturers through analytical findings which existed as the result of a year-round surveillance of products in the field and on the open market. No discredit to commercial analysts and experts is intended when we point out that identical services are not obtainable from them at any price. Yet they cost the California and the out-of-state manufacturers nothing, unless one counts the moderate registration fees of the State, as a cost.

While it may be a Hobson's choice, may be finally point out that whether the manufacturers like it or not, the matter of the sovereign rights of states has been so thoroughly and firmly established that it behooves manufacturers to co-operate rather than resist. We are hardly persuaded that all or even any considerable number of insecticide laws are made to harass, but we would not deny that the enforcement of some may have that effect.

A realistic attitude toward the situation has convinced us that the benefits definitely outweigh the dis-

advantages. Incidentally, we believe that a manufacturer who is unable to sustain the enforcement burdens involved by interstate business should not attempt to do an interstate business in the first place.

We take pleasure in complimenting you on the constructive attitude which you have taken on matters affecting the industries which your pages represent. We believe you printed the editorial in question on information as presented to you, but we also believe that a survey of insecticide and disinfectant manufacturers with regard to their feelings as to the enforcement of the laws affecting them, would have resulted in a preponderance of opinions very similar to ours.

We are in favor of an insecticide and fungicide law in every state of the Union, and of effective enforcement.—but we do hope that something will be done to introduce a standardization of the laws. Isn't this something for SOAP to work on?

*Editor's Note:* In line with Mr. Rosenfeld's suggestion, it is interesting to note that for the past several months committees of the Agricultural Insecticide & Fungicide Association, and of the National Association of Insecticide & Disinfectant Manufacturers have been working jointly to draw up a "model" state insecticide and fungicide law which will adequately protect the public and also the interests of all legitimate manufacturers. It is understood that this model law when completed will be submitted to state legislatures for proposed enactment.

## Wants Disinfectant Agency

A concern in Alexandria, Egypt, is interested in establishing an agency arrangement for sale of American disinfectants. Interested parties may secure further particulars through the U. S. Bureau of Foreign and Domestic Commerce, Washington, inquiry No. 6427.

## Shef Buys Weehawken Plant

Shef Mfg. Co., moth-proofing specialties and deodorants, has purchased a plant at 59-61 Chestnut St., Weehawken, N. J.

## Russell W. Birdsall Dies

Russell W. Birdsall, sales manager of Derris, Inc., New York, died in a hospital near his home in Westfield, N. J., May 6, of a heart ailment. Mr. Birdsall, who was only 41 years old, has suffered from this trouble for the past two years. He had been connected with Derris, Inc., for seven years since the formation of this insecticide house, and prior to that time had been with the parent concern, Dodwell & Co., Ltd. He is survived by his wife, a daughter ten years old, and a son four years old.

## Forms Standard Supply Co.

H. A. Galenes, formerly a partner in Ohio Food & Supply Co., Columbus, Ohio, has given up his connection with this firm and formed his own company, Standard Supply Co., 617 West Broad St., Columbus. The concern will deal in soaps, sponges, chamois, and other janitor supplies as well as food products.

## James Good Executive Changes

The accuracy of a news article in the May issue of SOAP reporting the resignation of Frank E. Wilson from his connection with James Good, Inc., Philadelphia, is questioned in a letter received by the editors from H. Goodman, treasurer of the company. He says: "Frank E. Wilson was never sales manager of James Good, Inc. Within the past few months there has been a reorganization of this corporation with the following officers now in charge: president, Mrs. Thomas F. Meehan; secretary, Miss M. F. Meehan; treasurer, Harry Goodman. At the time of the reorganization, which took place about three months ago, John P. Meehan who had been treasurer and later vice-president, treasurer and general manager for over seventeen years, was not re-elected as an officer of the corporation."

## N.P.C.A. To Meet in Omaha

The annual convention of the National Pest Control Association will be held this year, October 24-26 at the Hotel Fontenelle, Omaha, Nebraska. Walter S. McCloud of W. B. McCloud & Co., 510 N. Dearborn St., Chicago, heads the national convention committee, with John P. Linn, 1015 North 14th St., Omaha, acting as chairman of the local committee.

## Mrs. Henry Nelson Dies

Mrs. Henry Nelson died suddenly in Cleveland, May 4. Henry Nelson is vice-president of Chemical Supply Co., Cleveland, and a member of the board of governors of the National Association of Insecticide and Disinfectant Manufacturers.

## Afco Chemical Dissolved

Afco Chemical Co., sanitary products, 323 Fourth Ave., Rock Island, Ill., is no longer in business.

New San Francisco plant of Hockwald Chemical Co., manufacturer of soaps and sanitary products. The company recently celebrated its 35th anniversary.

### Dennis Patent Case to Trial

The action of American Cube Syndicate et. al. against Agicide Laboratories, Milwaukee, is expected to come to trial during the June session of the U. S. Federal Court, Milwaukee District. The action against Agicide Laboratories is based on a charge of infringement of the Dennis Patent which covers an application of cube root in insecticides.

### Dreyfus Sails for Europe

Dr. William Dreyfus, head of the technical division of West Disinfecting Co., Long Island City, N. Y., sailed for Europe June 3rd. Dr. Dreyfus, who is recovering from a long illness, will probably spend several months at his summer home at Oberendingen, Switzerland, recuperating. He is expected to return to the United States next fall.

### D. & H. Dust Pan Wanted

A subscriber to *Soap* who manufactures and distributes sanitary supplies wants to locate a manufacturer of metal specialties operating under the trade name of "D. & H." The product he is particularly interested in getting some information on, is a dust pan used in theatres, factories, etc., which is equipped with an automatic closure. Information about this concern will be appreciated by the publishers of *Soap*.

### Dumas Joins Rohm & Haas

C. J. Dumas, formerly with the insecticide division of Sinclair Refining Co., New York, has become associated with the sales department of Rohm & Haas Co., Philadelphia, in their insecticide division.

### Changes in Baldwin Personnel

Baldwin Laboratories, Inc., Saegertown, Pa., insecticides, waxes, and polishes, announce the appointment of J. L. Sherrick, as chief chemist in charge of the firm's wax division. He succeeds Charles Glickman. Dr. Sherrick comes to the Baldwin company from Mellon Institute, Pittsburgh, where he had been an Industrial Research Fellow. Baldwin Laboratories also announce the appointment of Giles Martin, as head of their white shoe dressings department. Mr. Martin was formerly chief chemist of Whittemore Brothers Corp., Cambridge, Mass., and has also been with Boston Blacking & Chemical Co., of Cambridge. C. A. Murray, has also been added to the firm's staff, in charge of the entomological laboratory.

### Elon H. Hooker Dies

Elon H. Hooker, organizer and president of Hooker Electrochemical Co., Niagara Falls, N. Y., died at his home in Pasadena, Calif., May 10, of heart disease. He was sixty-nine years old.

### Chemilene Fumigant Moves

Chemilene Grain Fumigant Co., insecticides, formerly at 1425 Sunset Blvd., Los Angeles, has moved to 2416 Hunter Ave.

### Carter Sanitary Moves

Carter Sanitary Supply Co., formerly at 618 Central Ave., Cincinnati, has moved to 207 West Court St.

### Eaton Wax Discontinues

Eaton Wax Co., 135 Dart St., Buffalo, N. Y., has gone out of business.

### Sanitary Supply Assn. Meets

The annual convention of the National Sanitary Supply Association was held at the Roosevelt Hotel, Pittsburgh, May 16-18. R. L. Johnson, Nashville Products Co., Nashville, Tenn., was elected president for the coming year. The program included displays by manufacturers of sanitary supplies, a series of addresses on subjects of interest in the sanitary and janitor supply fields, a stag dinner, and the annual banquet. Ellis Davidson, Ellis Davidson Co., New York, and R. W. Baedecker, Colgate - Palmolive - Peet Co., Jersey City, N. J., were among the speakers.

### Holbrook Rotary Elects Baird

Gordon Baird, of Baird & McGuire, Inc., Holbrook, Mass., has been elected president of the Randolph-Holbrook Rotary Club of that city in a recent election. Mr. Baird is currently recovering from a streptococcus infection from which he has been suffering the past few weeks.

### A.B.C. Exterminating Moves

A.B.C. Exterminating Co., formerly at 5216 Broadway, Chicago, has moved to 1133 Foster St.

### Leghorn Trading Moves

Leghorn Trading Co., New York importing firm, has moved to larger quarters at 21 West St.

### Breuer in New Quarters

Breuer Electric Mfg. Co., Chicago manufacturer of electric sprayers for insecticides, moved on June 1st into the two-story brick building shown above. The building which is of modern, sprinklered construction, containing 16,000 square feet of floor space, is located at 5100 N. Ravenswood Ave., along the Northwestern R.R. tracks just a mile west of the Edgewater Beach Hotel, scene of many of the summer conventions of the National Association of insecticide and Disinfectant Manufacturers. A. A. Breuer, head of the company, informs us that the move has been under consideration for some time and gives the Breuer organization vastly improved facilities.

## Announce New Insecticide

A new synthetic fly-spray base reported capable of replacing a substantial proportion of the pyrethrum now used,—up to 70 per cent in some cases,—has been announced by E. I. du Pont de Nemours & Co., Wilmington. The new insecticide compound is isobutyl undecylenamide, and is termed Compound *I. N.* 930 by Du Pont. According to the company, the product is completely safe and non-poisonous in fly sprays and other insecticides, and causes no irritation of skin, or of mucous membranes when inhaled. The compound is stated to dissolve in petroleum giving clear solutions, and to give an effective liquid insecticide exceeding the kill of the N.A.I.D.M. Official Test Insecticide at a materially lower cost than the equivalent straight pyrethrum product of O.T.I. grade. The chemical itself is reported to have a slight apricot-like odor, and practically no odor when diluted in a fly spray. It is also stated to be non-staining and fully stable based on tests conducted over the past four years at the Du Pont laboratories. It is used only in conjunction with pyrethrum and not alone. Du Pont has announced that the product will be marketed through John Powell & Co., New York.

## Criticize Rotenone Method

The new Jones-Graham technique proposed for the analysis of rotenone in a recent issue of the *Journal of American Official Agricultural Chemists* was the subject of criticism in an address by Dr. D. C. Beach of S. B. Penick & Co., New York, at the May 16 meeting of the Scientific Section of the Proprietary Association. Dr. Beach reported that in some roots the method gives unusually low results as compared with the previous method in use. Rotenone has been calculated in the past from the weight of crystalline rotenone carbon tetrachloride solvate. In the new method the solvate is converted back into rotenone and the latter determined directly. The Jones method for purification of the solvate seems to introduce some margin of error, according to Dr. Beach, as some samples give unusually low results. Commenting on Dr. Beach's paper, Dr. Harvey Seil of Seil, Putt & Rusby, New York, stated that in his own experience he had found it extremely difficult to extract all the rotenone by straight extraction with carbon tetrachloride. He recommended the estimation of the tetrachloride and calculation of the rotenone from that figure, eliminating the possibility of error through losses due to solubility.

## Adds Mops to Sanitary Line

Kuhn Mfg. Co., sanitary supplies, Macon, Ga., is now manufacturing wet mops and mop heads in addition to its line of disinfectants, insecticides, soaps and other sanitary specialties. This is the company's fifth year in business.

## Wants American Insecticides

A concern in Bombay, India, is interested in communicating with American manufacturers of insecticides relative to establishing an agency arrangement. Interested parties may secure further particulars through the U. S. Bureau of Foreign and Domestic Commerce, Washington, inquiry No. 6232.

## Maywood Exterminators Move

Maywood Pest Exterminators Co., formerly at 1206 South First Ave., Maywood, Ill., has moved to larger quarters at 1413 Washington Blvd. Ma-Pex Products, a division of the company, has moved to the same address. Maywood Pest Exterminators Co. was established in 1931 by G. W. Amerson.

## Noxx Chemicals Moves

Noxx Chemicals, insecticides, formerly at 262 S. Lazelle St., Columbus, Ohio, has moved to the Peruna Bldg., 244 S. 3rd St.

## Fumeral Mails Literature

Fumeral Co., Racine, Wis. is mailing literature covering the engineering features of its line of diffusers for insecticides and moth preparations. Copies are available.

## N.A.I.D.M. Convention Program

(*From Page* 103)

Report of Special Committee on Revision of Constitution and By-Laws —W. J. Zick, Stanco, Inc.
Adjournment.
Luncheon.

**Tuesday, June 14, 1938**

Announcements.
**"NAIDM Fellowship Report on Test Methods against Crawling Insects"** Dr. F. L. Campbell and Mr. E. N. Woodbury, Ohio State University, Columbus, Ohio
Report of Insecticide Scientific Committee — Dr. Alfred Weed, John Powell & Co.
(1) Revised Peet-Grady Method
(2) Methods of Chemical Tests
**"Current Insecticide Marketing Problems"**—H. A. Thomas, Shell Petroleum Corporation (Report of Insecticide Marketing Committee).
**"Cattle Spray Technique"**—Professor E. Searles, Entomologist, University of Wisconsin, Madison, Wisconsin.
Progress Report of Disinfectant and Antiseptic Scientific Committee — Dr. George F. Reddish, Lambert Pharmacal Company.
Report of Disinfectant and Antiseptic Marketing Committee—H. W. Hamilton, White Tar Co. of N. J., Inc.
**"The Effects of Pyrethrins I and II on House Flies—A Method of Determining the Knockdown of Insecticides"**—By W. N. Sullivan, H. W. Haller, E. R. McGovran and G. L. Phillips, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, Washington, D. C. Presented by W. N. Sullivan.
Report of Special Committee on Federal and State Experiment Stations —John N. Curlett, McCormick & Co.
Adjournment.
Luncheon.

**Wednesday—June 15, 1938**

Meeting called to order.
Announcements.
Report of Legislative Committee—C. L. Fardwell, McCormick & Co.
Discussion of Insecticide and Disinfectant Model Law.
**"Recent Developments Affecting Antiseptics, Germicides and Disinfectants and Their Advertising"** — George W. Hoover, M.D., M.S., Washington, D. C., formerly Chief Drug Control U. S. Department of Agriculture.
Report of Resolutions Committee.
**"Future of Household Insecticides on the Farm"**—Prof. J. J. Davis, Chief in Entomology, Purdue University, Lafayette, Ind.
**"Let's Hear from Sanitary Chemicals"** —Melvin Fuld, Fuld Bros. (Report of Sanitary Specialties Committee.)
Unfinished Business.
Adjournment.
**Informal Banquet and Floor Show: 7:00 P.M.**

### R. B. Stoddard with Terra

Russell B. Stoddard, who has been associated with R. J. Prentiss & Co., New York, for the past four and one half years in charge of their insecticide division, specializing particularly in the rotenone insecticide materials, has joined Terra Chemical Corp., 512 Greenwich St., New York. This firm processes materials for insecticide manufacturers and others, specializing in colloidalized insecticide and fungicide materials.

### B. & M. Open New York Office

Baird & McGuire, Inc., manufacting chemists, Holbrook, Mass., have opened a New York sales office at 79 Wall St. Frank C. Holbrook is manager. Mr. Holbrook has been with Baird & McGuire since 1935. The new office will serve the metropolitan New York district and the State of New Jersey. Eastern States Supply Co. was formerly the firm's New York sales representative.

### Insecticide Co. Names Agency

Hy Grade Colloidal Insecticide Co., Richmond Hill, N. Y., has placed its advertising account with Charles Advertising Service, New York. Newspapers, magazines and business publications will be used.

### Hear Talk on Termites

A meeting of the Professional Exterminators Association, Inc., New York, was held at Town Hall, New York, May 18. The group was addressed by Dr. C. H. Curran, of the American Museum of Natural History, on wood-boring insects and their habits. Following Dr. Curran, attorneys for the Professional Exterminators Association reviewed the case of Vermite Co., New York, a member of the association which had experienced labor trouble recently. An employe had been discharged by the firm, which had resulted in a strike being called by the union because of an alleged seniority clause in its contract with the company. The firm contended the man was discharged for cause, and obtained an injunction enjoining picketing by the union, with the result that the entire matter was referred to the State Labor Board. The decision of the arbitrator of the State Labor Board was that there had been no seniority clause in the contract, that the strike had not been justified, and that the employe had been discharged for cause.

### Kroneman With Penn Oil

Pennsylvania Oil Products Refining Co. of Warren, Pennsylvania, has appointed Wm. F. Kroneman, 1016—76th Street, Brooklyn, as director of sales for their petrolatums and white mineral oils. Mr. Kroneman has been with R. J. Prentiss & Co., New York, for the past few months in their insecticide sales department. Prior to that he was connected with Sherwood Petroleum Co., Brooklyn.

### Crane Chemical Moves

Crane Chemical Corp., deodorizers, formerly at 66 South 20th St., Irvington, N. J., has moved to 258-26 Belleville Ave., Belleville, N. J.

### Disinfectant Spray

A disinfectant spray for toilet use contains 15 parts of triethanolamine oleate dissolved in 70 parts of alcohol, 5 parts of Formalin and 10 parts of a suitable perfume material such as one containing pine needle oil, lemon oil, spike oil etc. *Seifensieder-Ztg.* **65,** 220 (1938).

### Mystic Foam Moves

Mystic Foam Corp., sanitary products, formerly at 6602 Carnegie Ave., Cleveland, has moved to 2496 E. 124th St.

### New Rat Poison

A rat poison consists of a solid starch-containing food or bait such as wheat grains, mixed with a halohydrin of a polyhydric alcohol, e. g., glycerinemonochlorohydrin. I. G. Farbenindustrie A.-G. British Patent No. 474,677.

### Monsanto Names Dr. Nickell

Dr. L. F. Nickell, of London, who is managing director of the Monsanto British subsidiary, was recently elected a vice-president of Monsanto Chemical Co., St. Louis.

### Insecticide Patents

(*From Page* 131)

Entomology and Plant Quarantine, U. S. Department of Agriculture and in SOAP (13 [11]: 94).

McTavish (SOAP 14 [1]: 103) discussed mothproofing problems and reviewed recent patents in this field.

Vivian and Haller (U. S. patents 2,094,831, 2,095,939, 2,095,940, 2,095,941, 2,096,414, 2,110,896, 2,110,897 and 2,111,879) have patented several azo compounds for use as insecticides. These have given promising results in tests against mosquito larvae and certain agricultural pests and they should be effective against many household insects. Examples are 4-(p-nitrophenylazo)-resorcinol, p-(p-bromophenylazo)-phenol, p-iodabobenzene, 4-(p-bromophenylazo)-m-cresol, 4-(o-tolylazo)-o-toluidine, 4-(o-tolylazo)-1-naphthol, 4-(2-naphthylazo)-1-naphthol, and 1-phenylazo-2-naphthylamine.

Bousquet and Salzberg (U. S. patent 2,112,688) have patented a fly spray comprising a mixture of octyl and lauryl thiocyanates.

L. E. Smith (U. S. Patent 2,115,046) has patented ethers of 4,6-dinitro-o-cresol. The methyl ether is very toxic to mosquito larvae.

Smith and Sunderland (U. S. patents 2,097,136-7) have patented derivatives of 2,4-dinitro-6-cyclohexylphenol for use in fly sprays. These derivatives include esters such as the benzoate and chloro-acetate, and ethers such as the methyl, ethyl, and benzyl ethers of this phenol.

Austin and Salzberg (U. S. patent 2,097,435) have patented thiophthalides as insecticides.

Bruson (U. S. Patent 2,097,441) has patented aromatic polyether chlorides which are useful as intermediates in the preparation of detergents, emulsifying and insecticidal agents.

Bruson (U. S. patent 2,098,204) has also patented new phenols of the general formula $HOC_6H_4$-O-$CH_2$-$CH_2$-O-$CH_2$-$CH_2Cl$, which are

useful as germicides, fungicides, and as intermediates for the preparation of insecticides and mothicides.

Kilgore (U. S. Patent 2,107,-298) claims as an insecticide an organic compound having as part of its molecular structure a methylene radical interposed between two keto carbonyl radicals forming a group which is subjected to an electronic strain causing the methylene hydrogen atoms to become labile and migratory. Compounds toxic toward insects are: acetyl acetone, dibenzoyl methane, benzoyl acetone, ethyl acetyl pyruvate, and ethel benzoyl pyruvate.

Donlan (U. S. patent 2,096,-885) has patented an insecticide consisting of mineral oil of 300° F. to 600° F. boiling range consisting predominantly of paraffinic hydrocarbons plus an extract of pyrethrum, derris or cube.

Jones (U. S. patent 2,103,195) has patented a combination of rotenone with dichloroacetic acid as an insecticide.

O'Kane (U. S. patent 2,104,-757) has patented for use as an insecticide a glyceride oil containing derris, cube or pyrethrum extract or a synthetic insecticide and an emulsifying agent.

Reppe and Ufer (U. S. patent 2,098,759) have patented a process of producing thio-ethers which are useful for combating animal or vegetable pests.

Schaffer and Haller (U. S. patent 2,099,826) have patented dialkyl-acridans as insecticides.

L. E. Smith and Claborn (U. S. patent 2,100,493) have patented ortho, meta, and para-nitroiodobenzenes as insecticides.

Levine and McAllister (U. S. patent 2,101,587) have patented cyclohexene oxide. This may be used as a fumigant for the destruction of clothes moth larvae, cockroaches, and bedbugs.

Fulton and Fernelius (U. S. patent 2,101,645) have patented sulfur nitride as an insecticide. Against Mexican bean beetle larvae, this is one-third as toxic as pure rotenone and twice as toxic as calcium arsenate, or phenolthiazine.

Groll (U. S. patents 2,101,-648-9) claims unsaturated xanthates as insecticides. Examples are the xanthate of methyl vinyl carbinol and isobutenyl xanthate.

Barber (U. S. patent 2,103,-607) protects the ears of growing corn from insects by covering the silk end of the ear of corn with a substance that has been impregnated with hexachloroethane.

Vivian and Haller (U. S. patent 2,110,614) have patented an insecticide which contains phenazine as its essential active ingredient.

Schrader (U. S. patent 2,114,-577) has patented aliphatic sulfofluorides for combating bedbugs, cockroaches, flies, all kinds of moths, etc.

## Testing Fly Sprays

(*From Page* 125)

in the laboratory are described, and suggestions are made for further improvement in design.

A study was made of the performance of the turntable when used for the testing of kerosene-base insecticides as a settling mist against houseflies. It was found that increasing spraying pressure or delay in exposing the Petri dishes to the settling mist after spraying reduces the quantity of oil deposited during a 10-minute exposure and consequently lowers the mortality of houseflies exposed for the same period. The same treatments also reduce the mean size of oil droplets settling into the dishes. Mortality of houseflies also depends on the period of exposure to a settling mist and on whether or not the bottom of the dishes is covered with absorbent paper.

The advantages and limitations of the turntable are discussed and adaptations of it for various uses are suggested. It is not recommended at present for referee work on fly sprays that differ in the nature of their toxic ingredients, but it is recommended for the control of quality of any fly spray in factory production. An example of the latter use is given, in which pyrethrum sprays, differing in pyrethrin content, are compared.

Methods are described for obtaining large quantities of clean housefly eggs and for measuring them into culture media. A procedure is also described for obtaining clean puparia, which are used instead of chilled flies for stocking Petri dishes for tests. The flies emerge in screened dishes and are fed in the dishes until they are used for tests.

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## Roaches-Insecticide Resistance

(*From Page* 117)

*Conclusions:* The ultimate-conclusions of this study may be summarized briefly:

1. Roaches 17 weeks old are the most resistant to the action of liquid insecticides.
2. There is no definite relationship between tests with roaches 17 weeks old and tests with roaches of mixed ages.

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## Dairy Market

(*From Page* 107)

The purchasing of cattle sprays for members of this organization is not handled centrally, therefore, very little information about them could be obtained from the purchasing department. The intention, however, is later on to add insecticides to the list of sanitary chemicals already being purchased, as an accommodation to the dairymen. In anticipation of this, the buyer expressed interest in studying the N.A.D.I.M. specifications. (This has since been mailed to him.—Editor.)

One large buyer of sanitary chemicals in the dairy industry encountered in this investigation is, and has been for sometime, purchasing insecticides in addition to detergents and sterilizers for its farmer-producers. Operating 75 fluid milk plants in the New York area, this company is probably the largest buyer of sanitary chemicals in the dairy field, locally or nationally. In 1937, for use in the New York milkshed, an increasing quantity of livestock spray, fly spray and prepared chlorine disinfectant were purchased for use by this company's farmers. For its own bottling plants, 400 tons of caustic soda, 40 tons of trisodium phosphate, 50 tons of light soda ash, and 4,000 gallons of chlorine were purchased.

The requirements for their insecticides, according to the purchasing agent, are high killing strength, low price and lack of odor and taste. While he himself, he pointed out, knew very little about insecticides, it was not necessary for him to be informed on the subject, since the final decision on the quality of the product was up to the laboratory department, which passes on each sample submitted to him. (We wonder by what method. The purchasing agent wouldn't say.—Editor.) If the laboratory says it's O.K., it is O.K. as far as he is concerned, he said, providing the price is low enough. (Another buyer who wants the best for the lowest price.—Editor.)

As for the requirements for detergents in the dairy field, only alkali products are used.—technical grades of caustic soda, sodium metasilicate, trisodium phosphate and soda ash. These alone and in mixtures with each other and a few other substances, are sold to the dairy industry under numerous trade names. The ability of these detergents to dissolve milk curd depends largely on the pH of the solutions and the proportion of the $Na_2O$ which will react. Caustic soda solutions have the highest pH in equivalent concentration, with the pH of solutions of metasilicate, trisodium phosphate, and soda ash decreasing in the order named. Caustic soda solutions, however, when used alone do not rinse as well as other alkalis. In washing milk bottles, an alkaline film adheres to the glass surface and is carried over into the rinse tanks so that rinsing is difficult. Consequently, other alkali salts are added to aid in free rinsing.

While caustic soda may be effective in combination with alkali salts for bottle washing, it cannot be used on many types of dairy equipment due to its corrosive nature. Sodium metasilicate has been found to be the most effective and least corrosive. The metasilicate has also been tried out in several soaker type bottle washers, but it appears to lack the "lubricating" properties necessary for smooth operation of the machine. The bottles do not drop freely from the carriers. When added in small quantities to caustic soda, however, the result is a clean, brilliant bottle. Oftentimes, phosphoric acid is used in place of alkalies as a casein, or "milk stone" remover. If the deposit consists mainly of milk solids, the application of an alkaline detergent at 120°-130° F. will usually do the work, but if the deposit is the result of heat coagulation of milk protein and minerals in combination with precipitated salts from the washing liquid, acid may have to be used.

As for the use of insecticides in the bottling plants.—if the purchase of these products is any criterion, the insect problem is a minor one. Examination of purchasing sheets of two of the larger firms showed no insecticide purchases ostensibly for their own use. They claimed no roaches, ants, or other insect problems.—and the wide use of chlorine products and alkali solutions in all parts of the plants may have something to do with this. However, these firms operate cheese plants and the insect problems in this type of factory is only too well known. The possibility is that the cheese factories purchase individually for their own use. Information on this point was not available.

## Mothproofing Compound

Insects and their larvae are killed by solutions or mixtures containing thioanthrene, its derivatives or substitution products. Wool, feathers, furs, etc. may be preserved thereby. J. R. Geigy Akt.-Ges. French Patent No. 821,370; through Chem. Abs.

# LIQUIDATING

MACHINERY AND EQUIPMENT

## J. T. ROBERTSON CO. SYRACUSE, N. Y.

***ATTENTION SOAP & SANITARY PRODUCTS MANUFACTURERS!***

This is one of the finest soap plants we have ever liquidated. The machinery and equipment is all of recent design and in excellent condition. Don't miss this opportunity to fill your soap machinery requirements at a small fraction of the usual cost.

***Outstanding Bargains from Robertson Plant***

Wurster & Sanger Complete Double Effect Glycerin Evaporator

J. M. Lehmann 5 Roll Water Cooled 16″ x 40″ Steel Polishing Mill

Proctor & Schwartz Soap Chip Dryer 48″ Single Roll

Proctor & Schwartz Soap Chip Dryer 36″ Single Roll

Proctor & Schwartz Soap Chip Dryer 5 Cooling and Crushing Rolls

3 Jones Automatic Soap Presses

Ferguson & Haas Automatic Wrapping Machine

3 Blanchard No. 14 Soap Powder Mills

2 Shriver Filter Presses 30″ x 30″ 42 Plates

Pneumatic Scale Corp. Automatic Can Filler

2 Pneumatic Scale Corp. Automatic Filling and Weighing Machines with Top and Bottom Sealers for Filling Soap Chips and Powders into Packages

3 H-A Automatic Cutting Tables

2 H-A Automatic Slabbers

2 H-A Jumbo 10″ Plodders

2 H-A Preliminary 8″ Plodders

2 H-A Amalgamators

8 H-A Crutchers

6 H-A 4 Roll Granite Toilet Soap Mills

2 Dopp Crutchers

200 Soap Frames

3 Bliss Sealers

Also Kettles, Tanks, Machine Shop Equipment, Barrel Fillers, Pumps, Motors, Etc.

*We invite your inspection and inquiries. All machinery and equipment is priced for immediate sale.*

## NEWMAN TALLOW & SOAP MACHINERY CO.

1051 W. 35th ST., CHICAGO, ILLINOIS

OUR FORTY YEARS SOAP EXPERIENCE CAN HELP SOLVE YOUR PROBLEMS

# Classified Advertising

**Classified Advertising**—All classified advertisements will be charged for at the rate of ten cents per word, $2.00 minimum, except those of individuals seeking employment where the rate is five cents per word, $1.00 minimum. Address all replies to Classified Advertisements with Box Number, care of *Soap*, 254 West 31st St., New York.

## Positions Wanted

**Chemist, Ph.D.**—Thorough chemical and engineering training. Twelve years' executive duties. Extensive experience with disinfectants, antiseptics, detergents, and insecticides. Interested in development and production. Address Box No. 401, care *Soap*.

**Worker** with 12 years' experience in soaps, disinfectants, cleaning powders, desires connection. Familiar European practice. Prefer inside position. Address Box No. 388, care *Soap*.

**Soapmaker & Chemist**—With long years of experience in all phases of the manufacture of laundry, toilet and textile soaps, soap powders, etc., presently employed; desires executive position with reliable concern. Address Box No. 416, care *Soap*.

**Young Men**—Two young men seeking positions, one (30 yrs. old) a graduate chemical engineer, the other a high school graduate (21 yrs. old) with chemical and drug store experience. Further details from the Editor of *Soap*. Will do any type of work to break into new position.

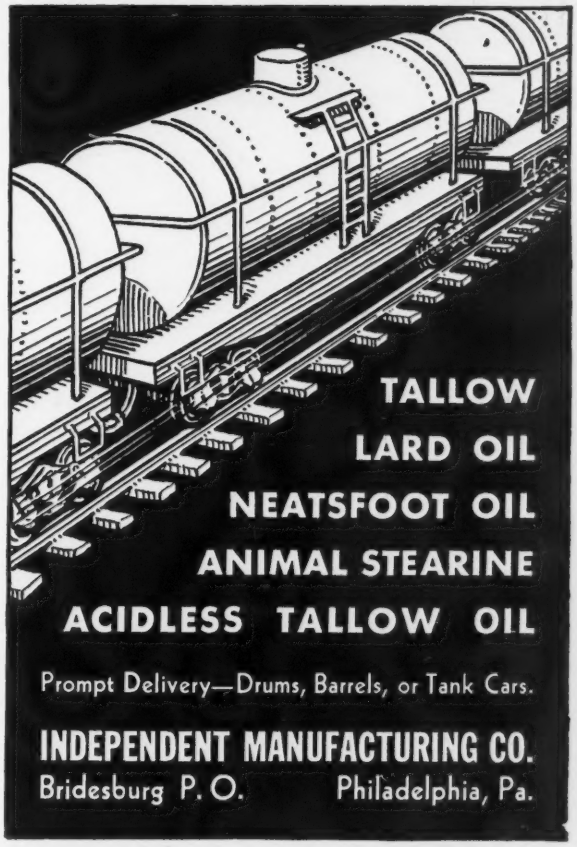
**Expert maker** of auto, metal and furniture polishes; waxes (liquid and paste); all kinds of cleaning compounds. Wonderful opportunity for young concern or someone starting in this business. Address Box No. 395, care *Soap*.

**Wanted: Sales Manager** under 45 years old with Chemical Engineering Degree and experience in stearic acid and heavy chemical sales. $10,000. yearly. Give details in confidence. Address Box No. 408, care *Soap*.

**Sales Executive** desires to connect with manufacturer or refiner. Twenty-two years' experience in mineral oils, insecticides, chemicals, aromatics. Address Box No. 406, care *Soap*.

**Chemist**—Man with twenty years' experience, ten of which has been in soaps, oils, detergents, cleaners, etc., desires new connection with preferably small or medium size company. M.I.T. graduate in chemical engineering. Address Box No. 405, care *Soap*.





# Raw Materials and Equipment

NOTE: This is a classified list of the companies which advertise regularly in SOAP. It will aid you in locating advertisements of raw materials, bulk and private brand products, equipment, packaging materials, etc., in which you are particularly interested. Refer to the Index to Advertisements, on page 158 for page numbers. *"Say you saw it in SOAP."*

## ALKALIES

John A. Chew, Inc.
Columbia Alkali Co.
T. G. Cooper & Co.
Dow Chemical Co.
Eastern Industries
Hooker Electrochemical Co.
Innis, Speiden & Co.
Niagara Alkali Co.
Solvay Sales Corp.
Jos. Turner & Co.
Warner Chemical Co.
Welch, Holme & Clark Co.

## AROMATIC CHEMICALS

American-British Chemical Supplies
Aromatic Products, Inc.
Compagnie Parento
Dodge & Olcott Co.
Dow Chemical Co.
P. R. Dreyer Inc.
E. I. du Pont de Nemours & Co.
Felton Chemical Co.
Firmenich & Co.
Charles Fischbeck Co.
Fritzsche Brothers, Inc.
General Drug Co.
Givaudan-Delawanna, Inc.
Magnus, Mabee & Reynard, Inc.
Monsanto Chemical Co.
Norda Essential Oil & Chemical Co.
Orbis Products Corp.
Schimmel & Co.
Solvay Sales Corp.
Ungerer & Co.
Van Ameringen-Haebler, Inc.

## BULK AND PRIVATE BRAND PRODUCTS

Associated Chemists, Inc.
Baird & McGuire, Inc.
Buckingham Wax Corp.
Candy & Co.
Chemical Supply Co.
Chicago Sanitary Products Co.
Clifton Chemical Co.
Davies-Young Soap Co.
Exterminating Materials Co.
Federal Varnish Co.
Fuld Bros.
Harley Soap Co.
Koppers Co.
Kranich Soap Co.
Philadelphia Quartz Co.
John Powell & Co.
Geo. A. Schmidt & Co.
Shawmut Specialty Co.
Sweeping Compound Mnfrs. of N. Y.
Uncle Sam Chemical Co.
T. F. Washburn Co.
White Tar Co.
Windsor Wax Co.

## CHEMICALS

American-British Chemical Supplies
John A. Chew, Inc.
Columbia Alkali Co.
T. G. Cooper & Co.
Dow Chemical Co.
E. I. du Pont de Nemours & Co.
Eastern Industries
Hooker Electrochemical Co.
Industrial Chemical Sales Div.
Innis, Speiden & Co.
Monsanto Chemical Co.
Niagara Alkali Co.
Philadelphia Quartz Co.
Rohm & Haas Co.
E. M. Sergeant Pulp & Chem. Co.
Solvay Sales Corp.
Standard Silicate Co.
Jos. Turner & Co.
Warner Chemical Co.
Welch, Holme & Clark Co.

## COAL TAR RAW MATERIALS

(Cresylic Acid, Tar Acid Oil, etc.)

American-British Chemical Supplies
Baird & McGuire, Inc.
T. G. Cooper & Co.
Innis, Speiden & Co.
Koppers Co.
Monsanto Chemical Co.
Reilly Tar & Chemical Co.
White Tar Co.

## COLORS

Fezandie & Sperrle
Pylam Products Co.

## CONTAINERS and CLOSURES

American Can Co. (Tin Cans and Steel Pails)
Anchor-Hocking Glass Corp. (Closures & Bottles)
Continental Can Co. (Tin Cans)
Hazel-Atlas Glass Co. (Bottles and Jars)
National Can Co. (Cans)
Sutherland Paper Co. (Packages)
Wilson & Bennett Mfg. Co. (Steel Pails and Drums)

## DEODORIZING BLOCK HOLDERS

Clifton Chemical Co.
Fuld Bros.

## ESSENTIAL OILS

Aromatic Products, Inc.
Compagnie Parento
Dodge & Olcott Co.
P. R. Dreyer Inc.
Felton Chemical Co.
Firmenich & Co.
Charles Fischbeck Co.
Fritzsche Brothers, Inc.
Leghorn Trading Co.
Magnus, Mabee & Reynard, Inc.
Norda Essential Oil & Chemical Co.
Orbis Products Corp.
Ungerer & Co.
Van Ameringen-Haebler, Inc.

## INSECTICIDES, SYNTHETIC

Kessler Chemical Co.
Rohm & Haas Co.

*(Continued on page 156)*

## Positions Open

**An opportunity** for a finished soap maker or soap plant manager, who wishes to get into business for himself. We have a well established business on powdered, granulated and flake soaps, dry cleaning soaps, potash soaps, etc. However, we are sales minded and would prefer to lease our soap plant to financially responsible party, who would make our soaps for us at a fair price. We feel a capable soap man could make a nice thing of this and would venture nothing but his investment in raw materials, finished goods and labor. Address Box No. 410, care *Soap*.

**Salesmen Wanted:** finest soaps, cleaners, polishes, waxes, disinfectants, deodorants; reliable manufacturer for sixty years. Prompt liberal commission. Address Baum's Castorine Co., Rome, N. Y.

## Miscellaneous

**Non-Skid No-Rubbing Wax**—A remarkable product. A large board of education reported it less slippery than any other wax. A national chain of stores had it approved by their insurance company. Sample it yourself. Low prices. Twi-Laq Chemical Co., 221 Sullivan St., Brooklyn, N. Y.

**Furniture Polish** manufacturer desires to contact wholesalers, jobbers and distributors for established product. Prompt delivery under own private label, if desired. Address Box No. 412, care *Soap*.

**Floor Brushes**—We manufacture a very complete line. Catalogue sent upon request. Flour City Brush Company, Minneapolis, Minn., or Pacific Coast Brush Co., Los Angeles, Calif.

**Complete Soap Plant Equipment for Sale:** Proctor soap chip dryer; automatic soap press; wrapping machine; 4 roll stone mills; foot press; plodders 6", 8", 10"; soap boiling kettles; 6 knife chipper; two-way cutting table; frames; filter presses; crutchers; mixers, boilers. Stein Equipment Corp., 426 Broome St., New York City.

**For Sale:** One 8-inch Heavy Duty Clyde Extruder with feed worms delivering to auger, water jacketed, gear drive, $200.00. Bird & Son, Inc., 1472 West 76th Street, Chicago, Ill.

**"Non-Rubbing Wax"**—For canners and jobbers. Highest Gloss you ever saw at the Lowest Price you've heard. Just send for a free sample and compare. Carter-Reid Company, P. O. Box 65, Roxbury Crossing Station, Roxbury, Mass.

# Raw Material and Equipment Guide

(*Continued from page* 154)

NOTE: This is a classified list of the companies which advertise regularly in SOAP. It will aid you in locating advertisements of raw materials, bulk and private brand products, equipment, packaging materials, etc., in which you are particularly interested. Refer to the Index to Advertisements, on page 156 for page numbers. *"Say you saw it in SOAP."*

## MACHINERY

J. H. Day Co. (Mixers, Sifters, Mills)
Anthony J. Fries (Soap Dies)
Houchin Machinery Co. (Soap Machinery)
Huber Machine Co. (Soap Machinery)
Ingersoll Steel & Disc. Div. Borg-Warner Corp.
International Nickel Co. (Monel Metal)
R. A. Jones & Co. (Automatic Soap Presses and Cartoning Machinery)
Koppers Company (Coal Tar Plants, Power Plants, Valves, Castings, Pipe, Tanks)
Proctor & Schwartz (Dryers)
C. G. Sargent's Sons Corp. (Dryers)
Sprout, Waldron & Co. (Mixing, Conveying, etc)
Stokes & Smith Co. (Packing Machinery)
Viking Pump Co. (Pumps)

## MACHINERY, USED

Consolidated Products Co.
Newman Tallow & Soap Machinery Co.

## MISCELLANEOUS

American Standard Mfg. Co. (Wax Applicator)
Anchor-Hocking Glass Corp. (Metal Caps)
T. G. Cooper & Co. (Waxes)
Dicalite Co. (Insecticide Carrier, Filtering Materials, Abrasives)
Dobbins Mfg. Co. (Pails, Mop Wringers, etc.)
Exterminating Materials Co. (Exterminators' Supplies)
Flour City Brush Co.
Hercules Powder Co. (Pine Oil and Rosin)
Industrial Chemical Sales Div. (Decol. carbon, Chalk)
Innis, Speiden & Co. (Fumigants and Waxes)
Koppers Company (Coal, Coke, Roofing Materials)
Lenape Trading Co. (Waxes)
Pylam Products Co. (Lathering Agent)
S. Schwabacher & Co. (Naphthenic Soaps, White Mineral Oils)
Victoria Paper Mills Co. (Paper Accessories)

## OILS AND FATS

T. G. Cooper & Co.
Eastern Industries
Independent Mfg. Co.
Industrial Chemical Sales Div.
Leghorn Trading Co.
Murray Oil Products Co.
Newman Tallow & Soap Machinery Co.
Orbis Products Corp. (Stearic Acid)
E. M. Sergeant Pulp & Chemical Co.
Wecoline Products Co.
Welch, Holme & Clark Co.

## PARADICHLORBENZENE

John A. Chew, Inc.
Dow Chemical Co.
E. I. du Pont de Nemours & Co.
Hooker Electrochemical Co.
Monsanto Chemical Co.
Niagara Alkali Co.
Solvay Sales Corp.
Jos. Turner & Co.

## PERFUMING COMPOUNDS

Aromatic Products, Inc.
Compagnie Parento
Dodge & Olcott Co.
P. R. Dreyer Inc.
Felton Chemical Corp.
Firmenich & Co.
Charles Fischbeck Co.
Fritzsche Brothers, Inc.
General Drug Co.
Givaudan-Delawanna, Inc.
Magnus, Mabee & Reynard, Inc.
Norda Essential Oil & Chemical Co.
Orbis Products Corp.
Schimmel & Co.
Ungerer & Co.
Van Ameringen-Haebler, Inc.

## PETROLEUM PRODUCTS

Atlantic Refining Co.
O'Connor & Kremp
Pennsylvania Refining Co.
S. Schwabacher & Co.
L. Sonneborn Sons.

## PYRETHRUM AND DERRIS PRODUCTS

Insect Flowers and Powder, Pyrethrum Extract, Derris Products

Associated Chemists, Inc.
Derris, Inc.
Lenape Trading Co.
S. B. Penick & Co.
R. J. Prentiss & Co.
McCormick & Co.
McLaughlin, Gormley, King Co.
John Powell & Co.

## SILICATES

Cowles Detergent Co.
E. I. du Pont de Nemours & Co.
Philadelphia Quartz Co.
Standard Silicate Co.

## SOAP DISPENSERS

Bobrick Mfg. Co.
Clifton Chemical Co.
Fuld Bros.

## SPRAYERS

Breuer Electric Mfg. Co.
Dobbins Mfg. Co.
H. D. Hudson Mfg. Co.
Fumeral Co.
Lowell Manufacturing Co.
Mystic Products Co.

## TRI SODIUM PHOSPHATE

John A. Chew, Inc.
E. I. du Pont de Nemours & Co.
Monsanto Chemical Works
Warner Chemical Co.

# Professional Directory

# Index to Advertisers

*For product classification see pages 154 and 156*

*For further details see announcement in 1937 SOAP BLUE BOOK



*Every effort is made to keep this index free of errors, but no responsibility is assumed for any omission.*

## Tale Ends

TO state that many, many manufacturers are scared stiff by the Wheeler-Lea Act,—that's the new legislative whiz-bang which gives the Federal Trade Commission a nice big powerful club over what you say in your advertising,—is to put it very mildly. Some manufacturers are reported planning to fire their ad managers and hire lawyers instead, so that they will be certain that everything is legal. The real thing which worries them is the question of just how tough the FTC plans to be in enforcing Mr. Lea's brain child!

—— ♦ ——

Other manufacturers say that they are so busy worrying about the general state of business that they don't have time for any additional worrying, either about the Lea Act or any other act. They want to know mostly where the next order is coming from.

—— ♦ ——

And speaking about worries,—if your subscription to SOAP is all paid up, you don't have to worry any more about your 1938 BLUE BOOK. You have it by now. If you did not receive a copy,—it's the largest and most useful,—and useable,—book of its type which we have ever published,—check up on your subscription. Don't miss this 1938 BLUE BOOK!

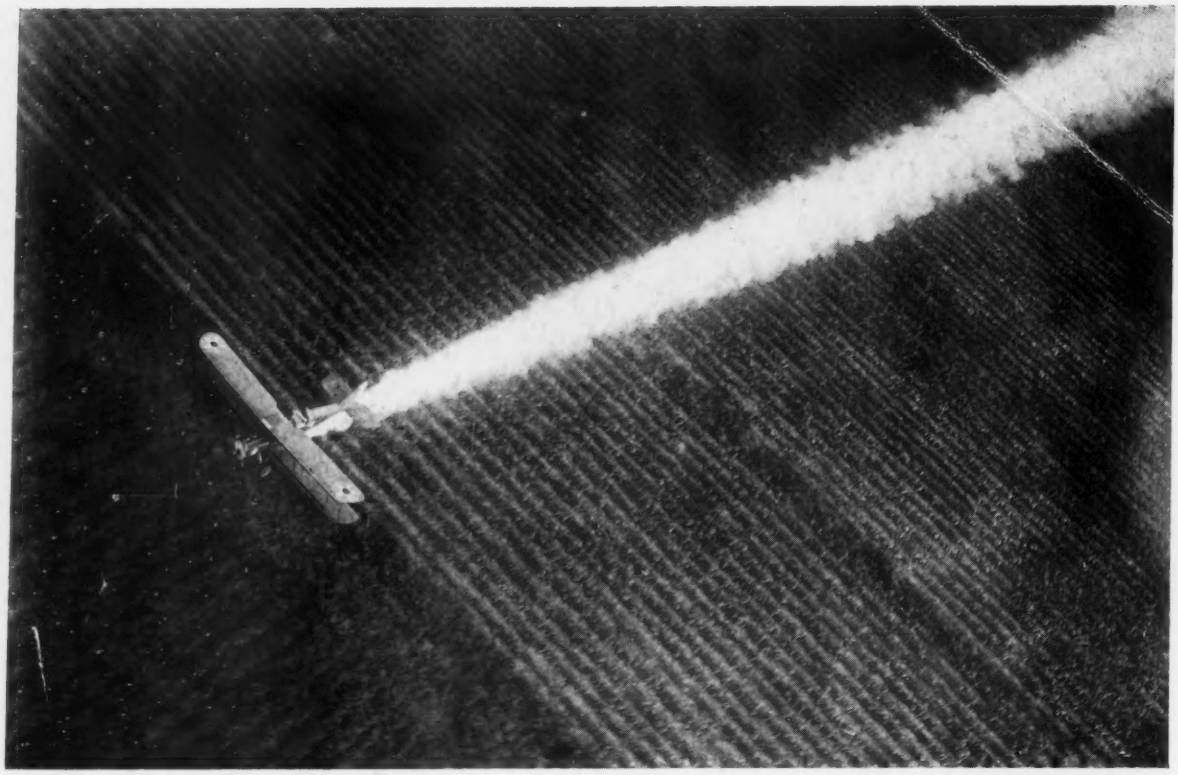
—— ♦ ——

Having just about recovered from the recent Toilet Goods Association convention held at the Biltmore, New York, and points west, including the Canoe Brook Country Club, we rise to state that it takes a strong, healthy man to come through one of those T.G.A. meetings and not wonder for a week after whether he should go off alone and die, or should do it publicly as an example to the rising generation. Now, we know why they only hold them once a year.


***Red***—one of nature's primary colors is symbolic of so many things "emotional" that when the eye encounters its fiery hue it is compelled to stop and look... Our attempt here to show its application in package design cannot begin to illustrate its many possibilities. Furthermore, the proper use of color and skill in design is only one feature of Continental's packaging service. Experienced product research is another. In Continental's laboratories experienced specialists are ready to help any manufacturer solve specific problems requiring scientific research... No matter what your problem is, you will find Continental pre-eminently qualified to render expert assistance . . . Consult us freely.



Continental Can Company



# LARGE or SMALL scale INSECT CONTROL at LOWEST cost per unit of area covered with DICALITE IG2 as the carrier

"DUSTING" with insecticides in which DICALITE IG2 is used as the carrier gives the lowest cost per unit of area covered on large or small scale operations. This is true because DICALITE IG2 leads to complete dispersion and greater spread, has good adsorption, gives greater volume, and is extremely light in weight, saving in freight charges. Besides, DICALITE IG2 permits the plants to breathe even when thoroughly sprayed. That is why this inert, uniformly stable carrier for insecticides is used so extensively in insect control and elimination.

Why not try DICALITE IG2 this season?

**TRY these OTHER DICALITE PRODUCTS**

**DICALITE FILTERAIDS** for clarifying all types of liquors.

**DICALITE FILLERS** for polishes, cleaning compounds and powders.

**THE DICALITE COMPANY**

520 N. Michigan Ave. CHICAGO
120 Wall St. NEW YORK
756 S. Broadway LOS ANGELES

**PRODUCTS OF UNIFORM SUPERIOR PERFORMANCE**

# *Crystal-Clear*

**PYROCIDE 20** is the purest form of pyrethrins commercially available. Brilliant and sparkling as a crystal goblet, Pyrocide 20 dilutes and remains clear in any base oil you choose for your insecticide. This amazing pyrethrum concentrate owes its clarity to a special process which chills the finished concentrate at 0° C. for 24 hours — removing resins and other materials which cause clouding. That's only one of the steps that make Pyrocide 20 the purest form of pyrethrins commercially available. Pyrocide 20 is freed of "false pyrethrins" by a patented process. It is deodorized, saving you from ⅓ to ½ of your perfume costs. It is stabilized with a proven anti-oxidant, made uniform in pyrethrin content. It is shipped in welded steel barrels to protect its purity.

For the full details of how you can build greater insecticide profits with Pyrocide 20, write today for our free illustrated booklet, "Pyrocide 20, Deodorized, Clarified." McLaughlin Gormley King Company, Manufacturing Chemists, Minneapolis, Minn.

# PYROCIDE 20

**THE *ORIGINAL*, STANDARDIZED PYRETHRUM CONCENTRATE**